SANYO

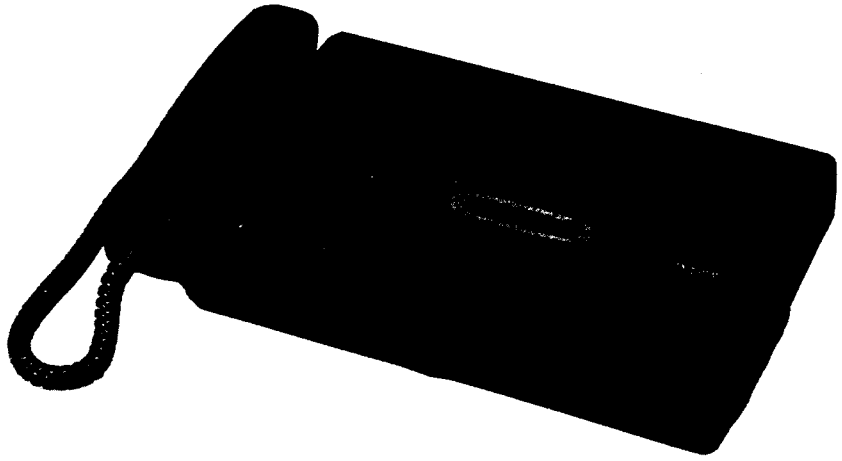
SERVICE MANUAL

Facsimile Transceiver

FILE NO.

PRODUCT CODE NO.
1 145 642 25

SFX-11
(GERMANY)



MAIN SPECIFICATIONS

Type	Desk-top type transceiver
Line connected	Public switched telephone network
Size of recording paper	216mm (8.5″) × 30m (98′)
Effective scanning width	208mm (8.2″)
Effective recording width	212mm (8.3″)
Transmission speed	9600/7200/4800/2400 BPS
Transmission time	Approx. 15 sec. (Transmission mode: standard)
Main scanning density	Fine mode: 8 pels Standard: 8 pels
Sub scanning density	7.7 lines/mm (fine) 3.85: lines/mm (standard) 15.4 lines/mm (Super fine mode)
Compression mode	MH (Modified Huffman) and Sanyo original
Reading method	CIS
Recording method	Thermal printing
Power supply	230V, 50/60Hz
Power consumption	Stand-by: 5W, Transmission: 20W, Reception: 120W, Copy: 130W
Outer dimensions (W × H × D)	378(W) × 80(H) × 227(D) mm 14.9″ × 3.1″ × 8.9″
Weight	Approx. 3.7kg (8.1 lbs)
Ambient temperature	5°C ~ 35°C (41°F ~ 95°F)

REFERENCE NO. SM620006

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1. INSTALLATION

To unpack the SFX-11:

1. Open the carton.
2. Remove the accessories (handset, recording paper roll, etc.) from the carton.
3. Remove the fax machine along with the foam braces on both sides.
4. Remove the polyethylene wrapping around the fax machine.
5. Remove the transportation tapes.
6. Save the carton and the foam braces for later storage and/or shipping.
7. Place the machine where there is access to an AC outlet and a modular phone jack. (Be sure to observe the precautions below.)

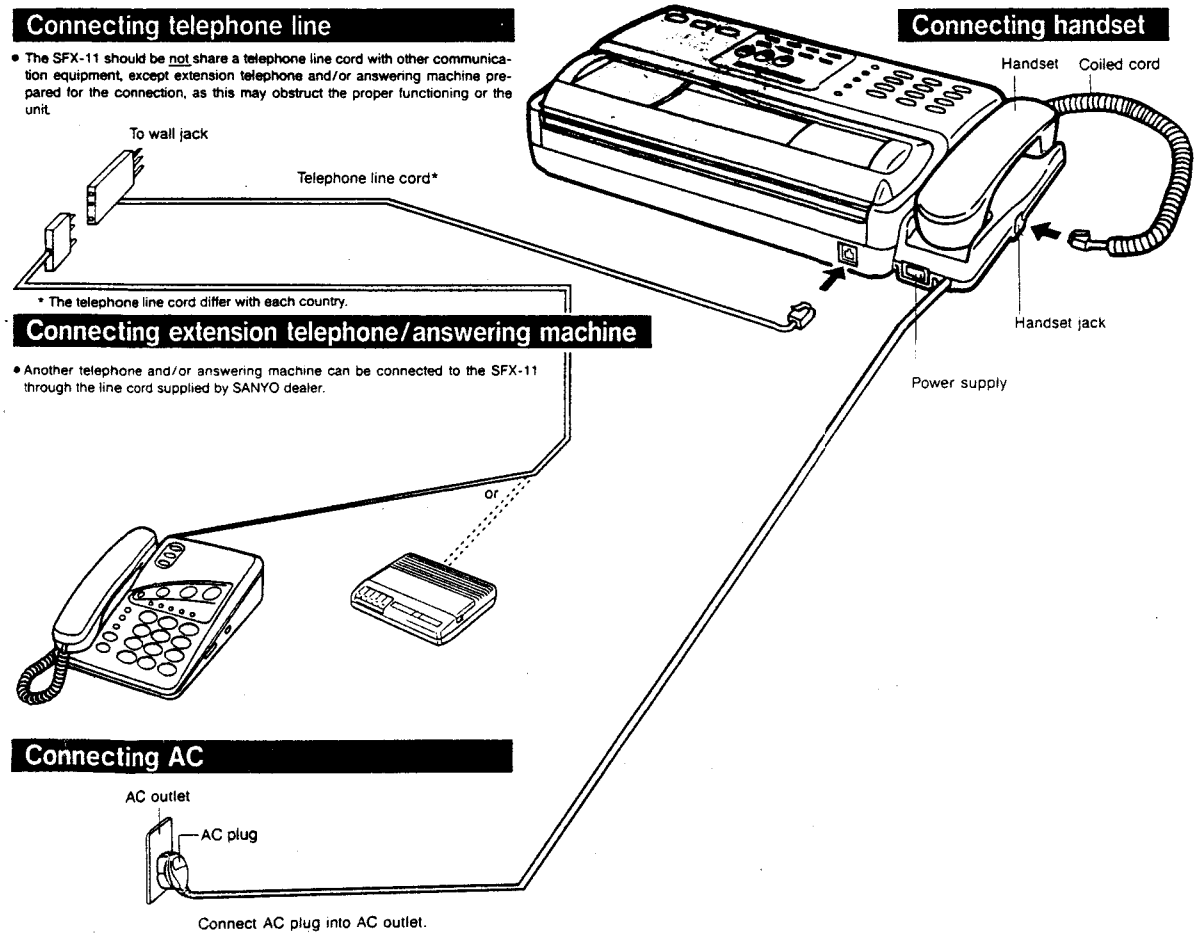
Placement precautions

- Avoid placing the SFX-11 in humid or dusty places, or in places where it will be exposed to excessive heat (direct sunlight, heaters, etc.).
- Do not step on, or set anything on, the AC cord. DAMAGE TO THE AC CORD IS A SAFETY RISK AND CAN CAUSE A FIRE.
- Install the unit only on a stable surface.
- Do not connect the SFX-11 to the same AC outlet as appliances that generate large amounts of interference (heaters with thermostats, appliances with motors, etc.). It is best to use a completely separate electrical outlet.
- Keep the SFX-11 away from water. If water accidentally enters the unit, unplug the AC power cord immediately. DO NOT SWITCH THE UNIT ON AGAIN. Contact an authorized Sanyo service center or dealer.

Handling precautions

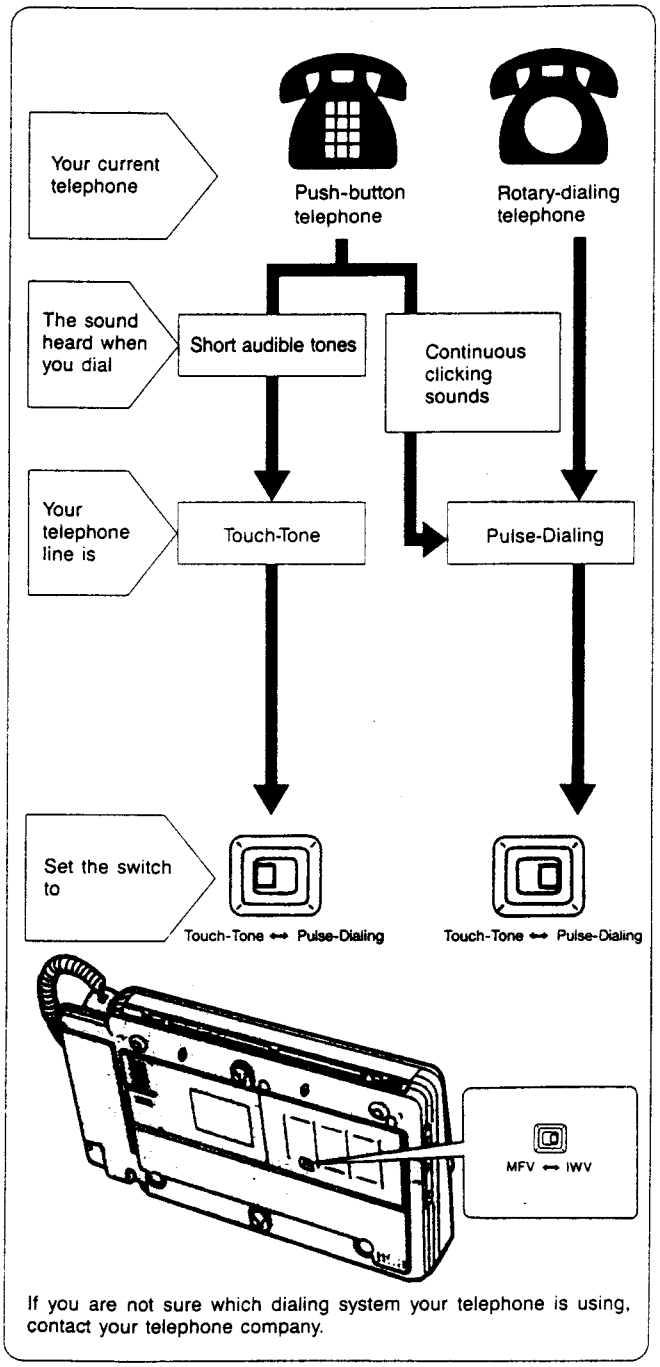
- Do not remove any parts that are held in place with screws. (The SFX-11 does not contain any user-serviceable items).
- Maintain standard room temperature 5°C – 35°C(41°F – 95°F) during use. Do not subject the unit to shock or vibration. Do not move the unit while it is in use.
- A rapid increase in room temperature in cool weather can cause condensation to form inside the unit. If this happens, wait at least 15 minutes after turning the unit on before attempting to operate it. Failure to do so may result in paper jams and/or poor print quality.
- When cleaning the cover or operation panel of the unit, wipe gently using a damp cloth to which a small amount of a neutral detergent has been added. NEVER USE SOLVENTS OR CHEMICALLY TREATED CLOTHS.

Telephone line and AC connections


Connecting telephone line
• The SFX-11 should be not share a telephone line cord with other communication equipment, except extension telephone and/or answering machine prepared for the connection, as this may obstruct the proper functioning or the unit.
To wall jack
Telephone line cord*
* The telephone line cord differ with each country.
Connecting handset
Handset
Coiled cord
Handset jack
Power supply
Connecting extension telephone/answering machine
• Another telephone and/or answering machine can be connected to the SFX-11 through the line cord supplied by SANYO dealer.
or
Connecting AC
AC outlet
AC plug
Connect AC plug into AC outlet.

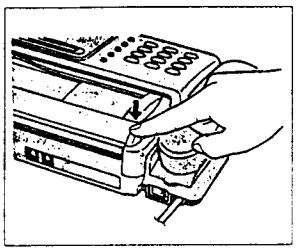
Setting the dialing mode switch

Set the dialing mode switch (DIAL) to the correct position for your telephone line.

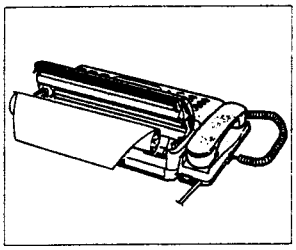


If you are not sure which dialing system your telephone is using, contact your telephone company.

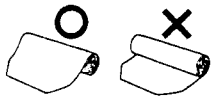
Installing recording paper

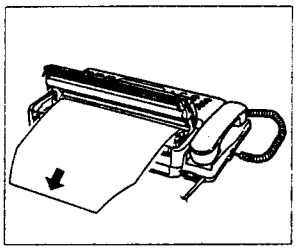
1 

Press the OPEN button to open the recording paper cover.

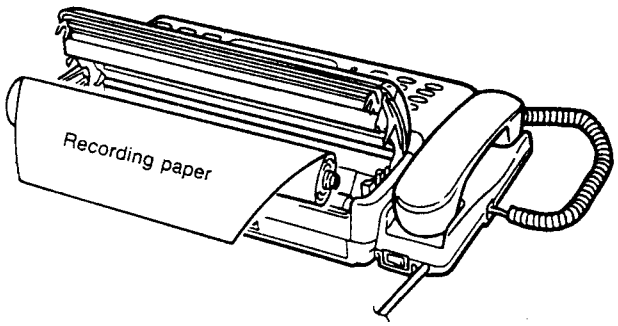
2 

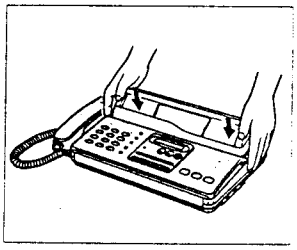
Insert the supplied roll of recording paper in the paper holder with both sides seated securely.



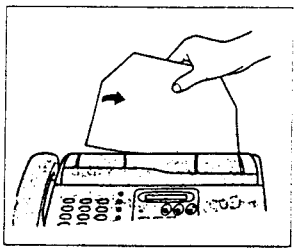
3 

Pull out the end of the recording paper from the recording paper exit until it extends 4 inches.



4 

Close the recording paper cover by pressing both left and right corners of the far end of the cover firmly.

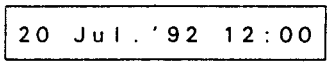
5 

Cut the extra recording paper.

■ Use only the recording paper specified for the SFX-11:
Type JH-A4T, 8.5" (216 mm) wide and 98' (30m) long. To purchase, contact your dealer.
The supplied roll is 49' (15m) long.

<MACHINE INITIAL>

1. Turn the Power Switch ON.
2. Slide the Service Switch to ON position
   (Refer to Page 27)



3. Press MENU 5 times.

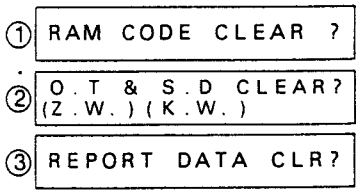
4. Press SET .

5. Press SET .

6. Press SET or MENU .

   Press SET to clear the all data. ——→ Return to Stand-by

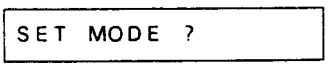
   Press MENU to clear the data individually.
   Each time pressing the MENU , display scrolls as shown right.



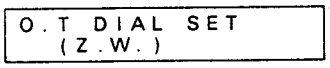
   Press SET to clear the data at the display. ——→ Return to Stand-by

<SETTING YOUR STATION NAME AND FAX NUMBER>

1. Press MENU 4 times.



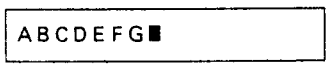
2. Press SET .



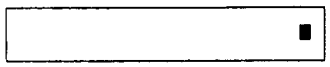
3. Press MENU twice.

4. Press SET .

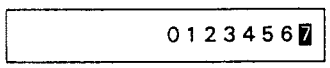
5. Enter your station name.
   A maximum of 24 characters can be entered.
   (See page 4.)



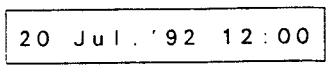
6. Press SET .



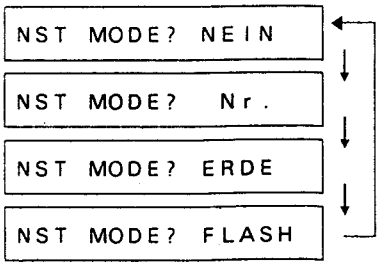
7. Enter your fax number.
   Your fax number can be entered up to 20 digits in length.
   Example: 01234567



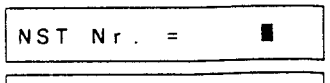
8. Press SET .

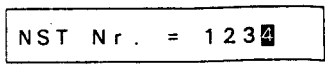


9. PBX MODE SETTING
   Press MENU .



   Press SET .
   Case of select "Nr", into PBX No. setting mode.
   (Case of "NEIN", "ERDE", "FLASH" ——→ Return to Stand-by)





   Entered up number to 4 digits in length, press SET . ——→ Return to Stand-by
   (If you make a mistake, press STOP/C then enter the correct number.)

■ To interrupt programming, press [STOP/C].

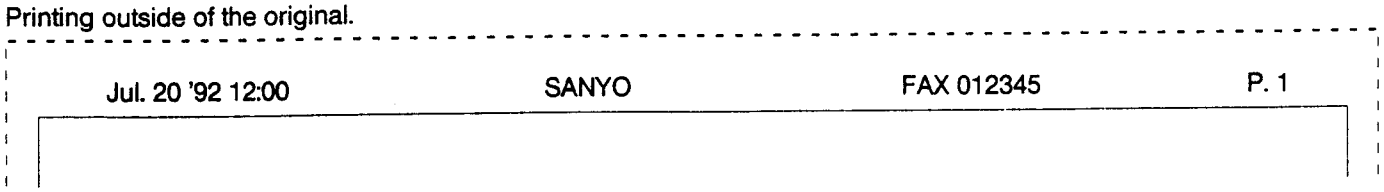
■ If you make a mistake in entering character, press [STOP/C] and then reenter the letter or number.

■ To enter a hyphen "–" between two digits, press [SPEED DIAL] ([KURZWAHL]).

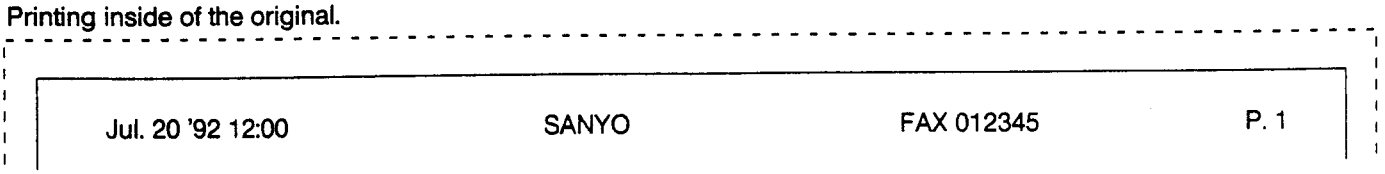
■ To enter a plus sign "+" in a head of your fax number, press [HOLD].

■ The header can be printed either outside the original document (in the top margin) or inside the document itself. You can select the desired setting using feature switch No. 20.
NOTE: If you choose to print the header inside the document, the top of the document (about 1cm) may not be reproduced.

Printing outside of the original.



Printing inside of the original.



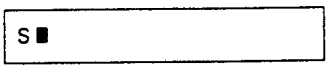
Entering names

You can enter the names corresponding to the programmed numbers using number keys. The codes (2-digit numbers) assigned to each letter and symbol are shown on the next page.

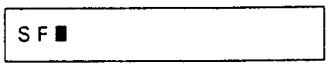
Entering letters

Example: To enter "SFX"

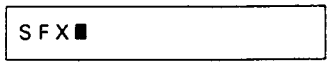
1. Press [3] · [6] to enter "S"



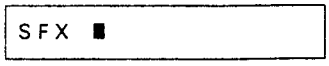
2. Press [2] · [3] to enter "F"



3. Press [4] · [1] to enter "X"



4. Press [0] · [0] to enter space.



Entering numbers

Example: To enter "67"

1. Press [6] to enter "6" and then press [#] key to move cursor right.

2. Press [7] to enter "7".

<Table of letter and symbol codes>

Character Code No.	Character Code No.	Character Code No.	Character Code No.	Character Code No.
space 00	(..... 14	K 28	Y 42	m 56
. 01	) 15	L 29	Z 43	n 57
, ... 02	< 16	M 30	a 44	o 58
: 03	> 17	N 31	b 45	p 59
; 04	A 18	O 32	c 46	q 60
• 05	B 19	P 33	d 47	r 61
+ 06	C 20	Q 34	e 48	s 62
− 07	D 21	R 35	f 49	t 63
/ 08	E 22	S 36	g 50	u 64
& 09	F 23	T 37	h 51	v 65
* 10	G 24	U 38	i 52	w 66
# 11	H 25	V 39	j 53	x 67
! 12	I 26	W 40	k 54	y 68
' 13	J 27	X 41	l 55	z 69

- To enter number
  0 ~ 6 ..... Enter the number and press [#] to move cursor right.
  7 ~ 9 ..... Enter the number. The cursor move to right automatically.

- If you make a mistake in entering a letter or a number, simply press [#] to move right or [*] to move left to the appropriate space and then enter the correct letter or number.

<ONE-TOUCH DIAL MEMORY PROGRAMMING>

1. Press [MENU] 4 times.

   SET MODE ?

2. Press [SET].

   O.T DIAL SET
   (Z.W.)

3. Press [SET] again.

   O.T No. = 1 ?
   (Z.W.)

4. Press one-touch dialing key (1-8).
   Example: To program a number using one-touch key 2, press one-touch key [2].

   O.T No. = 2 ?
   (Z.W.)

5. Press [SET].

   ■

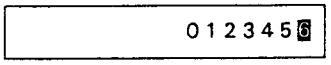
6. Enter the party's name (to a maximum of 16 characters).
   (See page 4 for detailed instructions.)

   ABCDEFG■

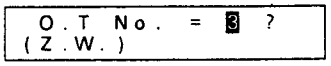
7. Press [SET].

   ■

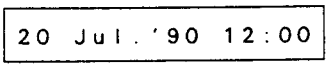
8. Enter the fax (or telephone) number.
(A maximum of 32 digits can be entered including pauses and hyphens.)
Example: 0123456



9. Press [SET].
To program other one-touch keys, repeat steps 4-9 above.



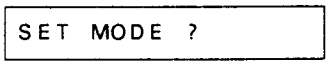
10. Press [STOP/C] to finish one-touch number programming.



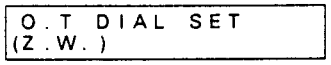
■ For instructions on printing out a numerical list of programmed names and numbers, see page 30.
■ To interrupt programing, press [STOP/C].
■ To enter a hyphen ("-"), press [SPEED DIAL] ([KURZWAHL]).
■ To enter a three-second pause between two digits of a number, press [REDIAL/PAUSE] in the appropriate place. (The ";" symbol indicates a pause.)

<SPEED - DIAL MEMORY PROGRAMMING>

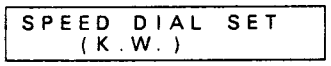
1. Press [MENU] 4 times.



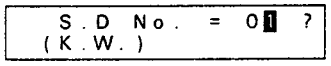
2. Press [SET].



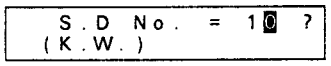
3. Press [MENU].



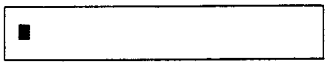
4. Press [SET].



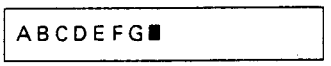
5. Enter a speed-dial number using the number keys.
Example: To store a fax number using speed-dial number 10.
Press [1], then [0].



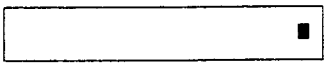
6. Press [SET].



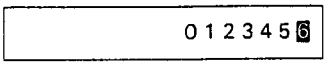
7. Enter the party's name (to a maximum of 16 characters).
(See page 4 for detailed instructions.)



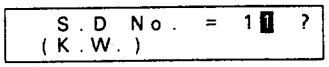
8. Press [SET].



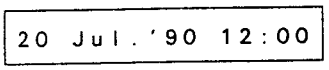
9. Enter the fax (telephone) number to be stored.
(A maximum of 32 digits can be entered, including pauses and hyphens.)
Example: 0123456



10. Press [SET].
    Repeat steps 4-10 to program other numbers.



11. Press [STOP/C] to finish speed-dial number programming.

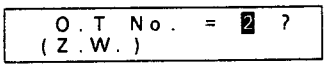


■ For instructions on printing out a numerical list of programmed names and numbers, see page 31.
■ To interrupt programing, press [STOP/C].
■ To enter a hyphen ("–"), press [SPEED DIAL] ([KURZWAHL]).
■ To enter a three-second pause between two digits of a number, press [REDIAL/PAUSE] ([WAHLWDH/PAUSE]) in the appropriate place. (The ";" symbol indicates a pause.)

Canceling programmed one-touch dialing

1. Press [MENU] four times.
2. Press [SET] twice.
3. Press the one-touch button need to be cancelled.

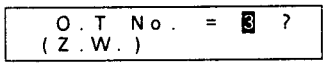
Example: One-touch 2



4. Press [SET].

5. Press [STOP/C].

6. Press [SET].
   Repeat steps 3-6 to cancel other one-touch key.



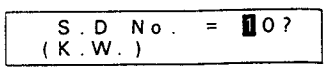
7. Press [STOP/C] to finish canceling.

Canceling programmed speed dialing

1. Press [MENU] four times.
2. Press [SET].
3. Press [MENU].
4. Press [SET].

Example: Speed dial number 10

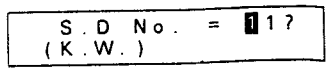
5. Press the number need to be canceled.



6. Press [SET].

7. Press [STOP/C].

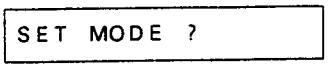
8. Press [SET].
   Repeat step 5–8 to cancel other speed dial.



9. Press [STOP/C].

<CALENDAR AND CLOCK>

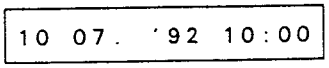
1. Press [MENU] 4 times.



2. Press [SET].

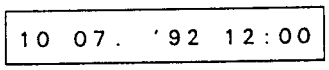
3. Press [MENU] 3 times.

4. Press [SET].

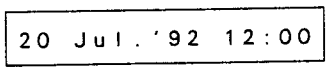


5. Enter the month, day, year and time using the number keys.
   - The time must be entered using the 24-hour system.
   - The month, day and year should be entered in 2 digits each.

   Example: to enter July 20, 1992, 12:00, press [0], [7], [2], [0], [9], [2], [1], [2], [0] and [0].



6. Press [SET].



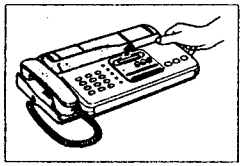
■ If you make a mistake, move the cursor to the appropriate place then enter the correct number.
Press [#] to move the cursor right.
Press [*] to move the cursor left.

Cleaning the housing (plastic parts used for the exterior of the unit)

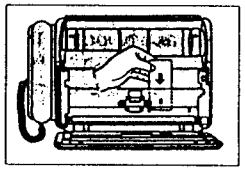
Turn off the power switch.
Gently wipe the housing with a soft clean cloth dampened with a small amount of a neutral detergent.
- Do not use a cleaning agent, such as alcohol and benzene.

Cleaning the document feed roller-2

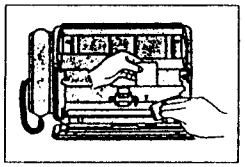
If a streak or dirty pattern appears on a copy or other party's received copy, clean the document feed roller-2 with a soft clean cloth with a small amount of neutral detergent.

1 

Open the operation panel.

2 

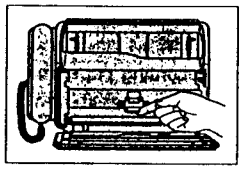
In order to rotate the document feed roller-2, insert a small piece of paper into the portion of a sensor as shown in the figure.

3 

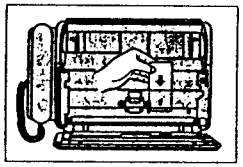
Clean the document feed roller-2, then dry thoroughly to prevent the document from jamming.

Cleaning the document feed roller-1 and sheet brake

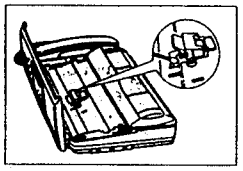
If the document jamming or overlapping frequently occurs, clean the document feed roller-1 and sheet break with a cotton swab dampened with a small amount of a neutral detergent.

1 

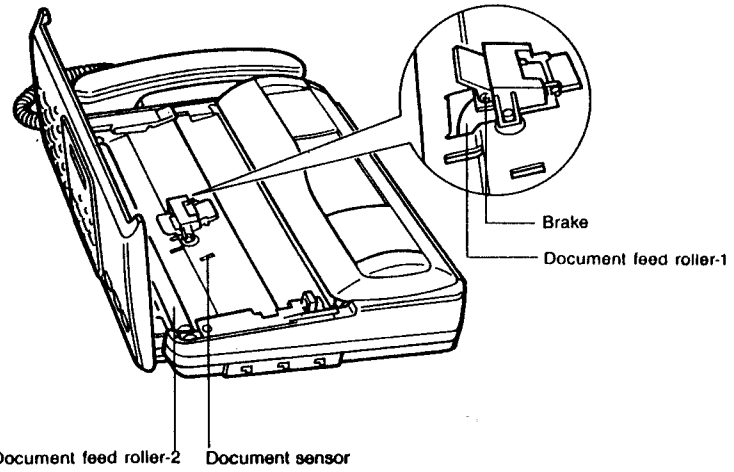
Open the operation panel then pull the document release lever as shown in the figure.

2 

In order to rotate the document feed roller-1, insert a small piece of paper into the document sensor as shown in the figure.

3 

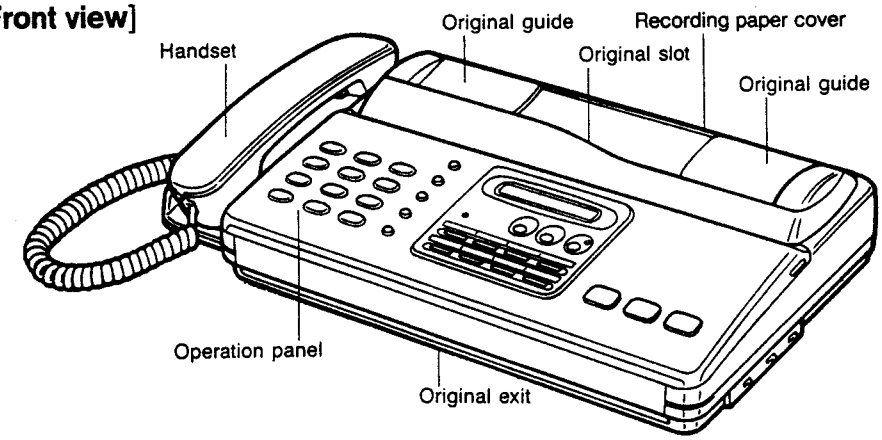
Clean the document feed roller-1 and sheet break, then dry it thoroughly to prevent the document from jamming.



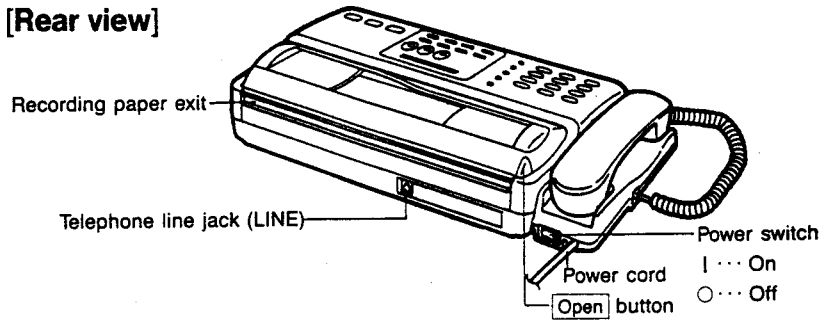
3. OUTLINE

(1) Part name and functions

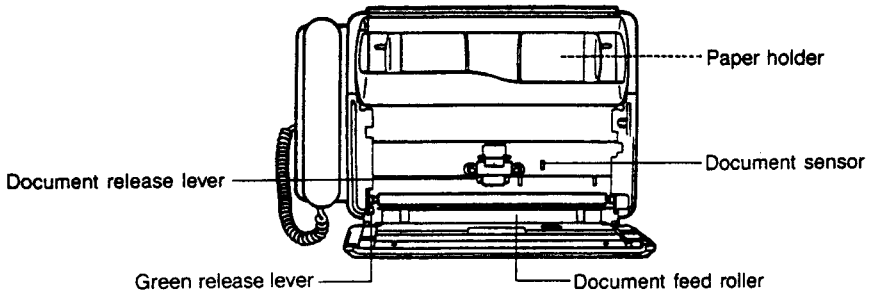
[Front view]



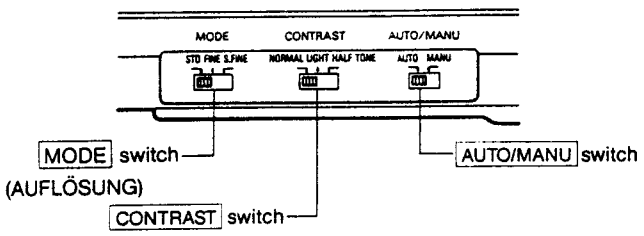
[Rear view]

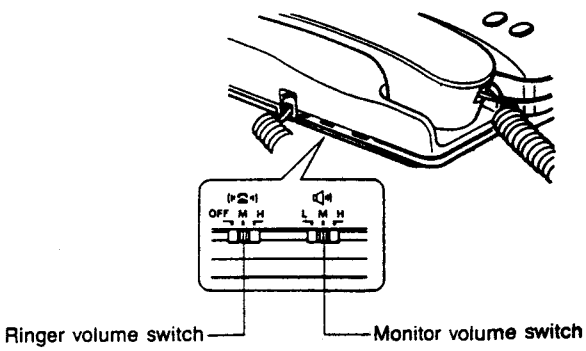


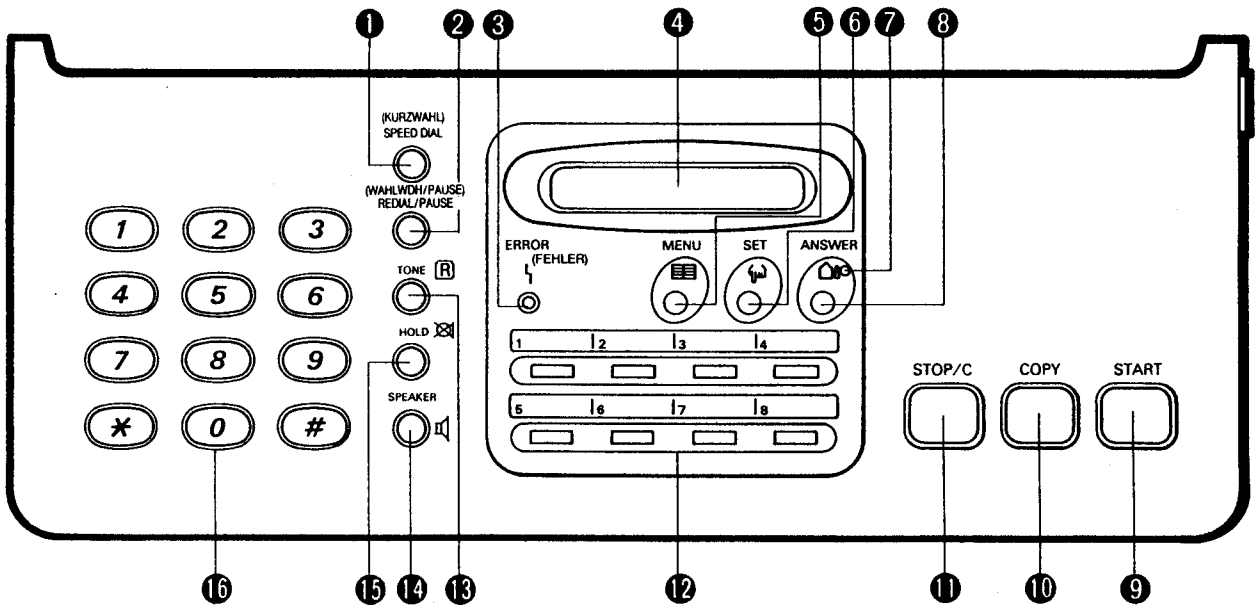
[Inner view]



Setting switches





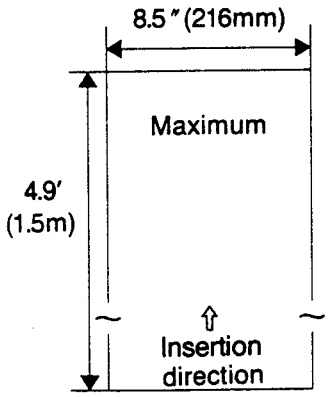


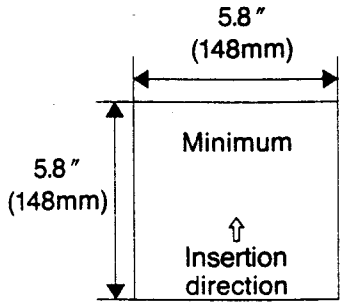
❶ SPEED DIAL Key (KURZWAHL)	• Press this key when using speed dial.
❷ REDIAL/PAUSE Key (WAHLWDH/PAUSE)	• Press this key to redial the last number dialed. • Press this key to insert a pause between two digits in a number being dialed.
❸ ERROR Lamp (FEHLER)	• Flashes if a communication error occurs.
❹ DISPLAY	• Shows calendar and clock functions, operation guidance, machine status, etc.
❺ MENU Key	• Press this key when selecting various functions.
❻ SET Key	• Press this key to confirm selections.
❼ ANSWER Lamp	• Lights when the unit is set to answer mode.
❽ ANSWER Key	• Press this key to set to answer mode.
❾ START Key	• Press to start transmission or manual reception.

❿ COPY Key	• Press to make a copy.
⓫ STOP/C Key	• Press to interrupt transmission/reception/copying or to stop the ERROR indicator flashing. • Press to cancel various setting and dialing functions and to remove an original document that has been placed in the unit.
⓬ ONE TOUCH Keys	• Frequently dialed numbers can be stored in memory using these 8 keys. The one-touch keys are also used when entering names in memory.
⓭ TONE Key (Ⓡ)	• Press this key to switch from pulse dialing to Touch-Tone dialing.
⓮ SPEAKER Key (🔊)	• Allows you to monitor a call without using the handset.
⓯ HOLD Key (⊠)	• Temporarily places a call on hold.
⓰ Number Keys 0~9 # *	• These keys are used to dial fax and phone numbers and to change various functions.

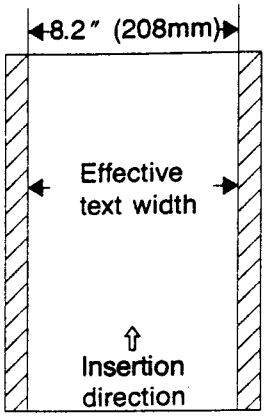
(3) Effective text width

■ Transmittable original size





■ Effective text width



Note: An original other than specified, make a reduction or enlargement copy by the photo copier, then use it as an original document.

■ Effective thickness

	1 original sheet	multi sheets
thickness (per sheet)	0.002″ – 0.006″ (0.05 – 0.15mm)	0.003″ – 0.005″ (0.08 – 0.13mm)

■ Notes on the suitability of documents:

- Allow ink and/or glue dry completely before inserting a document.
- Do not transmit curled or folded documents.
- Make sure that any paper clips, staples or pins have been removed from documents.
- When using carbon paper, waxed paper or vinyl-coated paper, always use a carrier sheet.
- Never use documents thicker than 0.006″ (0.15mm), metal sheets or cloth. Use a photocopy instead.

4. MECHANICAL OUTLINE

1) Transmission Mechanism
When, in Fig. 4-1, the document is inserted, the sensor 1 detects the document and the transmission motor starts to rotate. The ADF roller is rotated by the rotation of the transmission motor and the document is fed up to the platen roller and is stopped. When the START or COPY button is pressed here, the transmission motor rotates again and the document is fed forward.

2) As shown in Fig. 4-2, the recording paper is pressed by the platen roller and the thermal head. The platen roller is rotated by the reception motor and feeds the recording paper forward. When the recording is finished, a broken line is printed where the recording paper should be cut.

There are two sensors for the recording paper, one is for detecting the recording paper itself and the other is for detecting the recording paper ending.
When the black end-mark on the recording paper is detected by its sensor while receiving or copying is performed, "PAPIER PRUEFEN" is indicated on the LCD after completing the printing of its page.

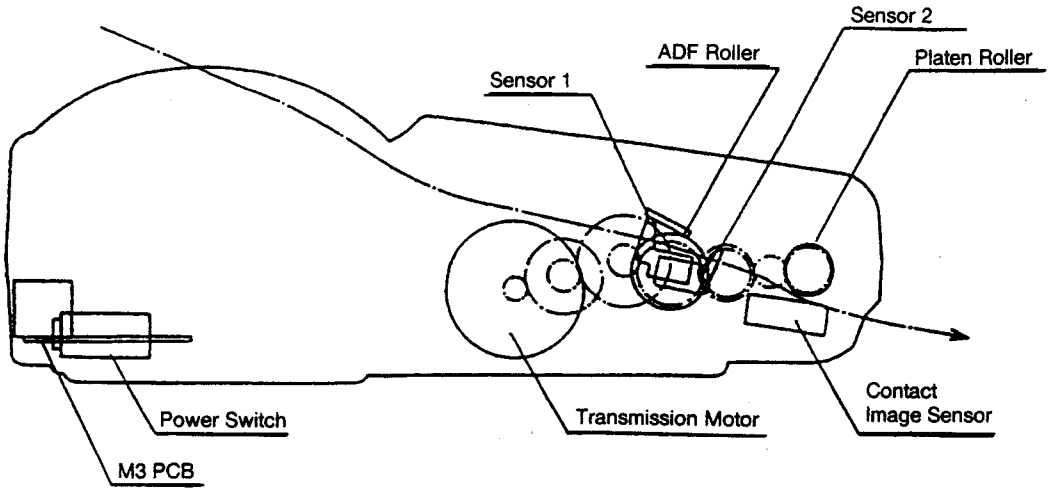


Fig. 4-1

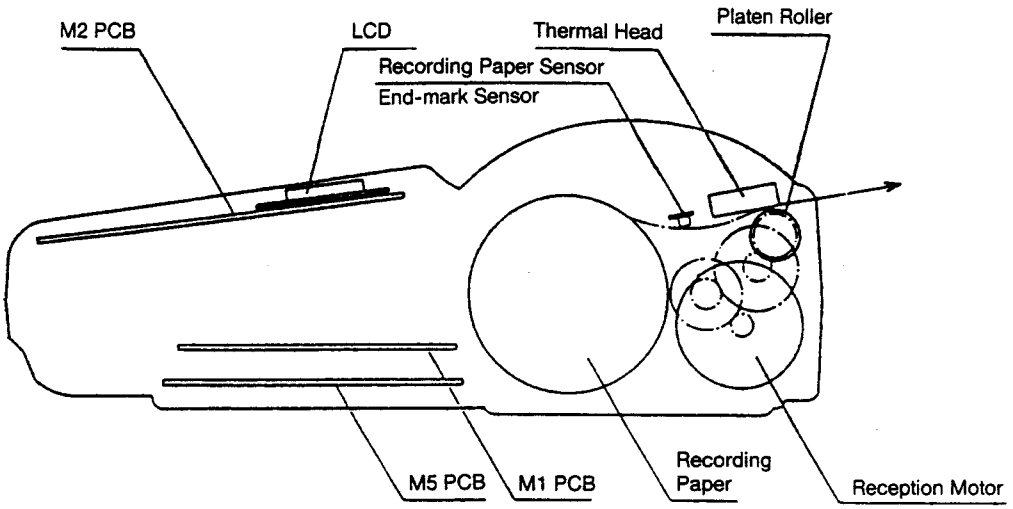


Fig. 4-2

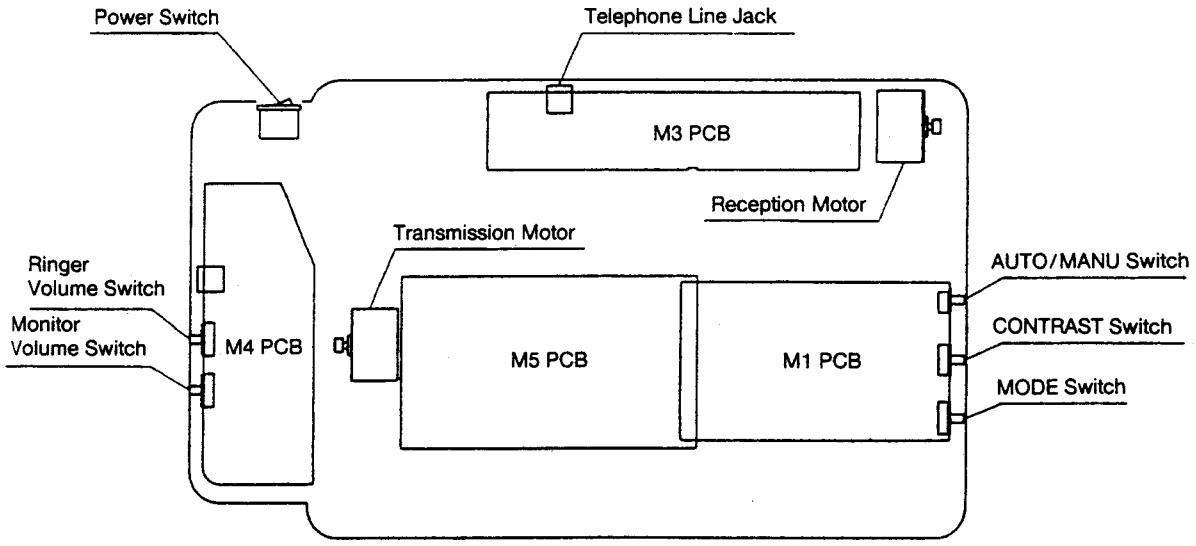


Fig. 4-3

5. TROUBLE SHOOTING

5-1. Explanation of the function for each PCB

1. M-1(Main) PCB
This PCB contains CPU and all of the control circuits, the following functions are included.

1) LSI so called FAX ENGINE (TC35168F)
   (1) 8-Bit CPU
   (2) Modem :
      - Modulation and Demodulation of signals
      - Tone signal generation and detection
      - Touch Tone Signal (DTMF) generation
      - Pre-recorded Voice Prompt generation
      - Melody generation (when conversation is put on hold)
   (3) Codec :
      - Coding and Decoding of image signal
   (4) Image Signal Processor :
      - Driving of CIS (Contact Image Sensor)
      - Convert analog signal to digital signal (two or multi value)
      - Reduction of image
   (5) DMA (Direct Memory Access) Controller :
      - Used when transferring the data from image signal processor to line memory, from line memory to modem, to thermal head and codec.
   (6) Real Time Clock
   (7) Stepping Motor Control
   (8) Thermal head Control
   (9) I/O ports control :
      - NCU
      - TEL
      - Mechanism
      - Operation Panel
      - LCD control

2) 1-Mbits EPROM :
This PROM contains the program to control CPU.

3) 64-Kbits SRAM (2-pcs) :
Used as line memory for memorizing image data temporarily or various data memory.

4) Memory back-up control :
Used to keep the stored data of SRAM and Clock.

5) NCU interface circuit :
This is a interface circuit for connecting the NCU and Modem.

2. M-2 PCB
This PCB consists of key matrix circuit controlled by "ROW" and "COL" signals, and LED circuit.

3. M-3 PCB
This is a Network Control Unit connecting the telephone line and this facsimile, and the following functions are included.
- Hook up detection
- Ringing detection
- Pulse Dialing Signal generation
- Relay driving
- Isolation circuit for transmission and reception

4. M-4 PCB
This is a telephone circuit PCB and the following functions are included.
- Speech network circuit
- Line monitor function
- Ringing generation

5. M-5 PCB
This is a power supply PCB using switching regulation method, and supplies +5Vdc, +12Vdc, -12Vdc, +24Vdc. Also this PCB contains motor driving circuit for transmission and reception motor.

6. LCD display
This LCD display consists of 16 digits x 1line LCD and common driving circuit.

7. Thermal Head
This thermal head consists of 1728 dots of heat generating elements and driver circuit.

8. Contact Image Sensor
This contact image sensor converts scanned image to electrical signal.

9. Monitor Speaker
This is a speaker used for line monitor. A switch for monitor volume control is mounted on M-4 PCB.

10. Ringer Buzzer
This is a buzzer to generate ringing. A switch for volume control is mounted on M-4 PCB.

11. Handset
This handset consists of a microphone and a speaker.

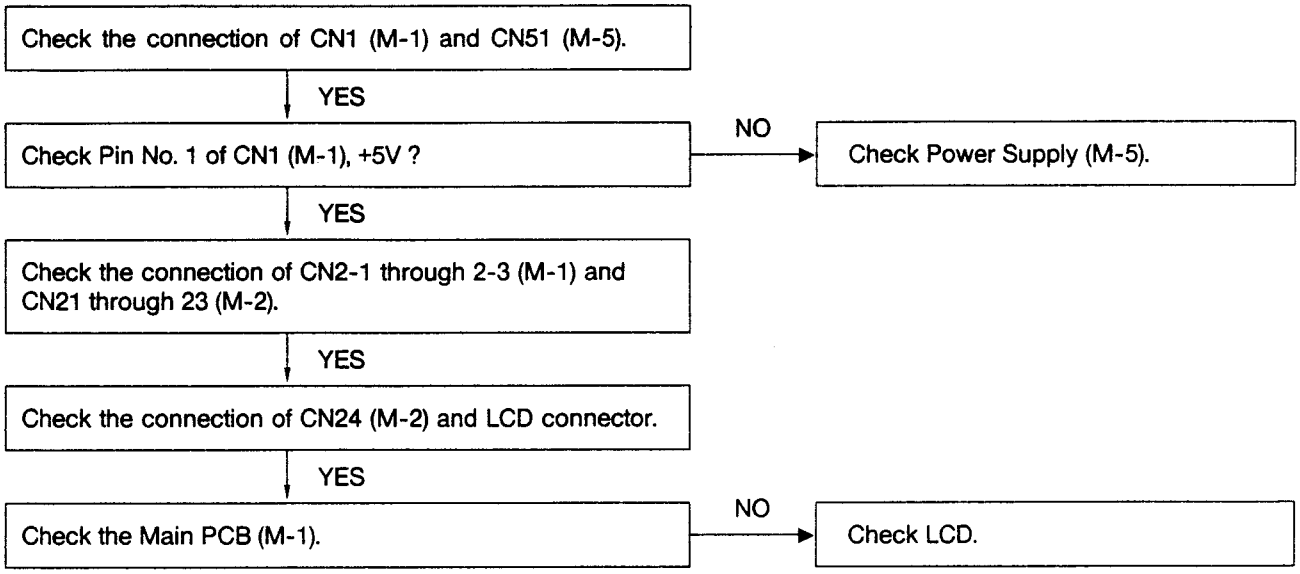
5-2. Trouble shooting for mechanical Parts

When trouble occurs, thoroughly confirm the cause of the trouble and carry out appropriate repair.

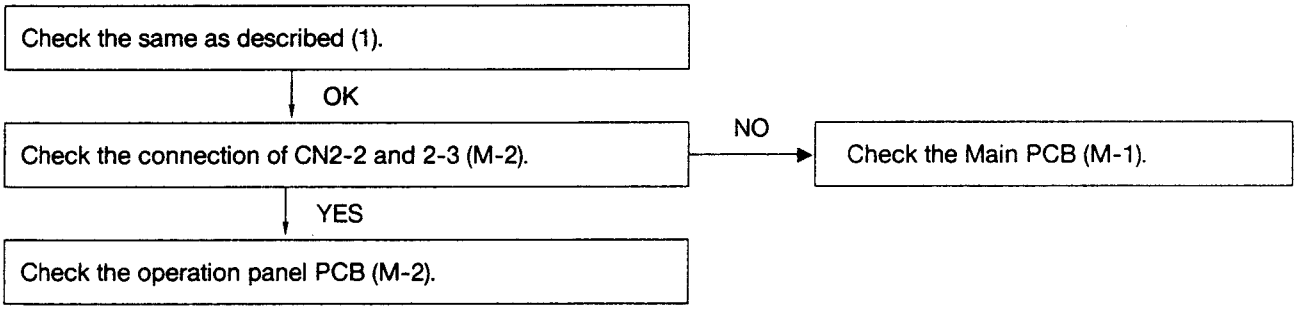
SYMPTOMS	CAUSE	COUNTERMEASURE
The document, even when inserted, is not fed.	1. The platen roller is not rotating properly. 2. Dirt on the ADF roller. 3. The sensor 1 is not adjusted properly or out of operation.	1. Press the green release lever, then insert the document again. 2. Clean the ADF roller. (See page 9) 3. Adjust the level of the sensor 1. Confirm the operation of the sensor 1. (See page 13)
The documents are fed over-lapping. (More than one sheet are fed at a time)	Dirt on the rubber sheet.	Clean the rubber sheet. (See page 9)
The document is not fed straight.	1. The original guide is not adjusted along by the original. 2. Dirt on the platen roller. 3. Pressure for the Contact Image Sensor is not equal in the both sides.	1. Adjust the original guide along by the original. 2. Clean the platen roller. (See page 9) 3. Adjust the pressure re-positioning the Contact Image Sensor. (See page 25)
When copying or transmitting the exceeding part of the original is printed as blurred black if less than A4 or letter size of original is used.	The exceeding part of the original on the platen roller is dirty	Clean the platen roller. (See page 13)
When copying, white vertical line appears that is not on the original.	1. There is dirt sticking to the thermal head. 2. The heating element of the thermal head is broken.	1. Clean the thermal head. (See page 13) 2. Replace the thermal head. (See page 25)
Although the recording paper is set properly, "CHECK PAPER ROLL" ("PAPIER PRUEFEN") is indicated on the LCD.	1. The recording paper sensor is not adjusted properly or out of operation. 2. The recording paper cover is not completely closed. 3. The switch for recording paper cover is out of operation.	1. Adjust the level of the sensor 1. Confirm the operation of the sensor 1. (See page 13) 2. Completely close the cover. 3. Replace the switch for the recording paper cover. (See page 45)

5-3. Trouble shooting for circuitry

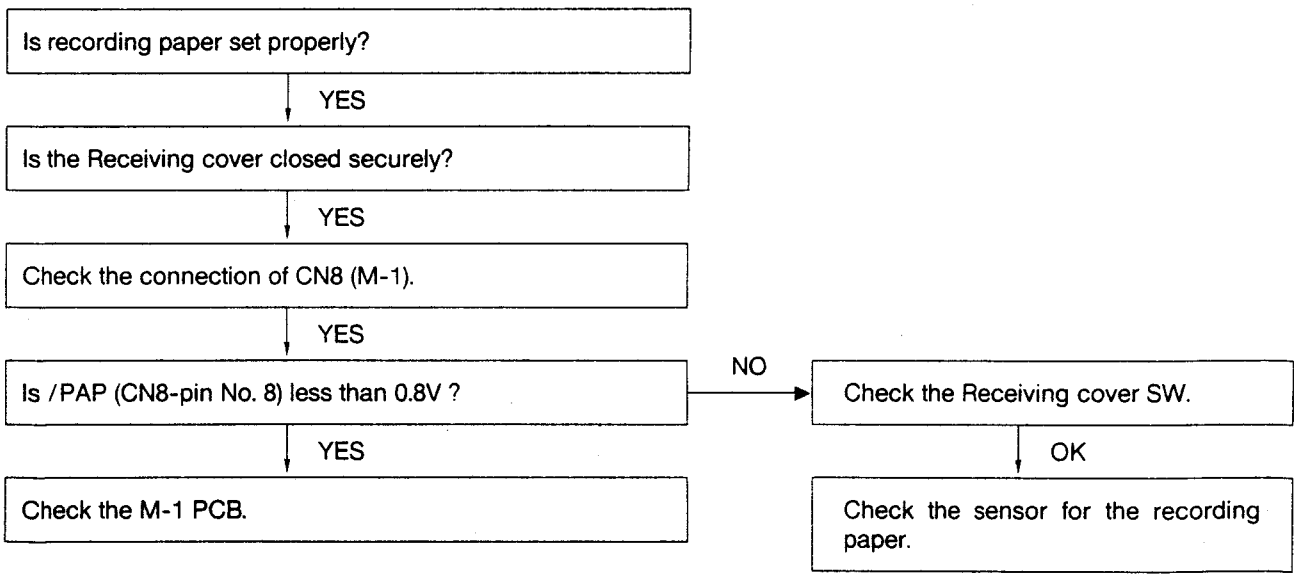
(1) No display on LCD light when Power switch is turned ON


Check the connection of CN1 (M-1) and CN51 (M-5).
YES
Check Pin No. 1 of CN1 (M-1), +5V ?
NO
Check Power Supply (M-5).
YES
Check the connection of CN2-1 through 2-3 (M-1) and CN21 through 23 (M-2).
YES
Check the connection of CN24 (M-2) and LCD connector.
YES
Check the Main PCB (M-1).
NO
Check LCD.

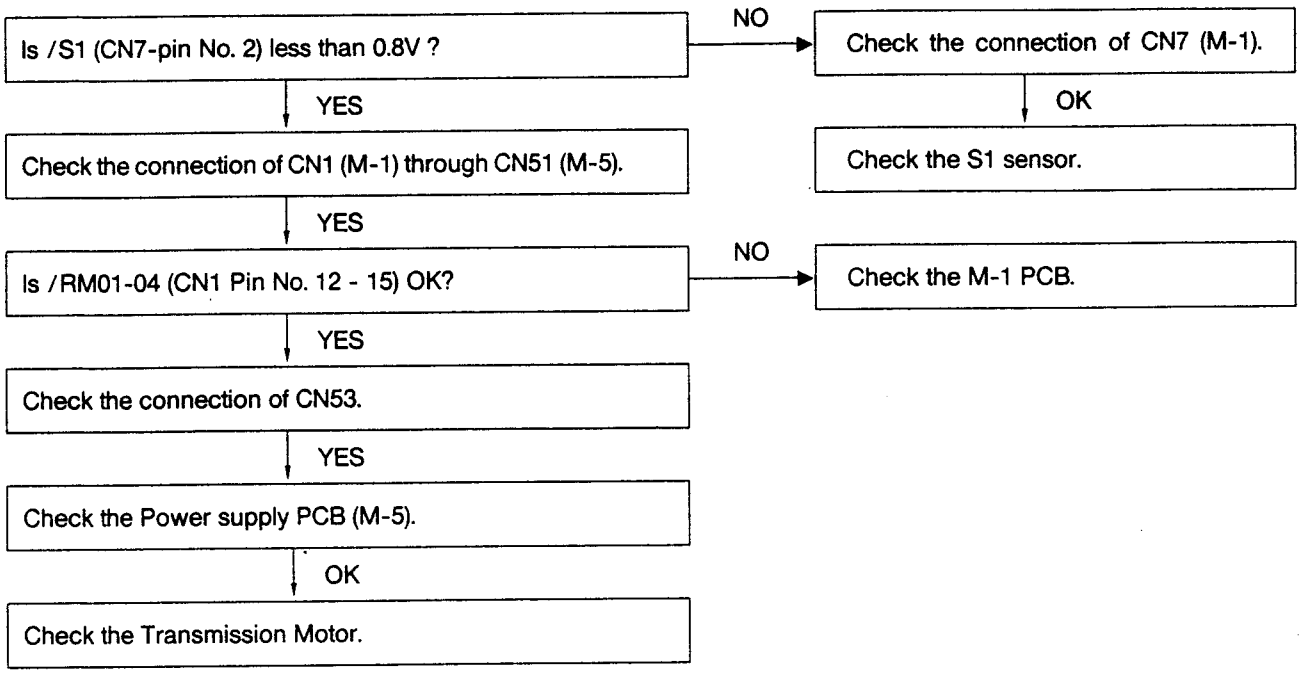
(2) Key-in is impossible from the operation panel


Check the same as described (1).
OK
Check the connection of CN2-2 and 2-3 (M-2).
NO
Check the Main PCB (M-1).
YES
Check the operation panel PCB (M-2).

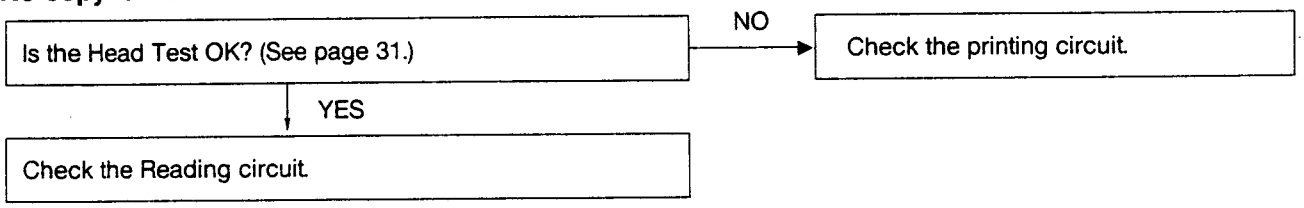
(3) LCD indicates "CHECK PAPER ROLL" ("PAPIER PRUEFEN")



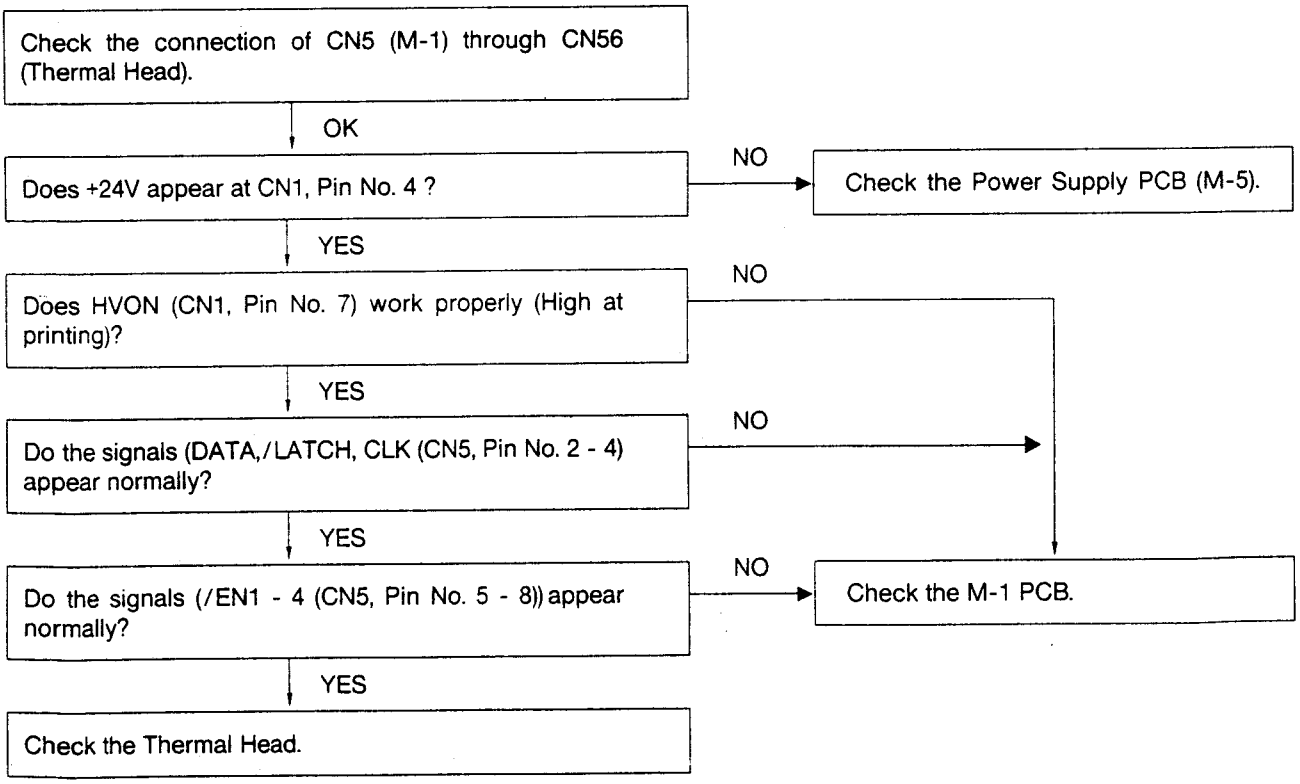
(4) No motor rotates when the original is inserted



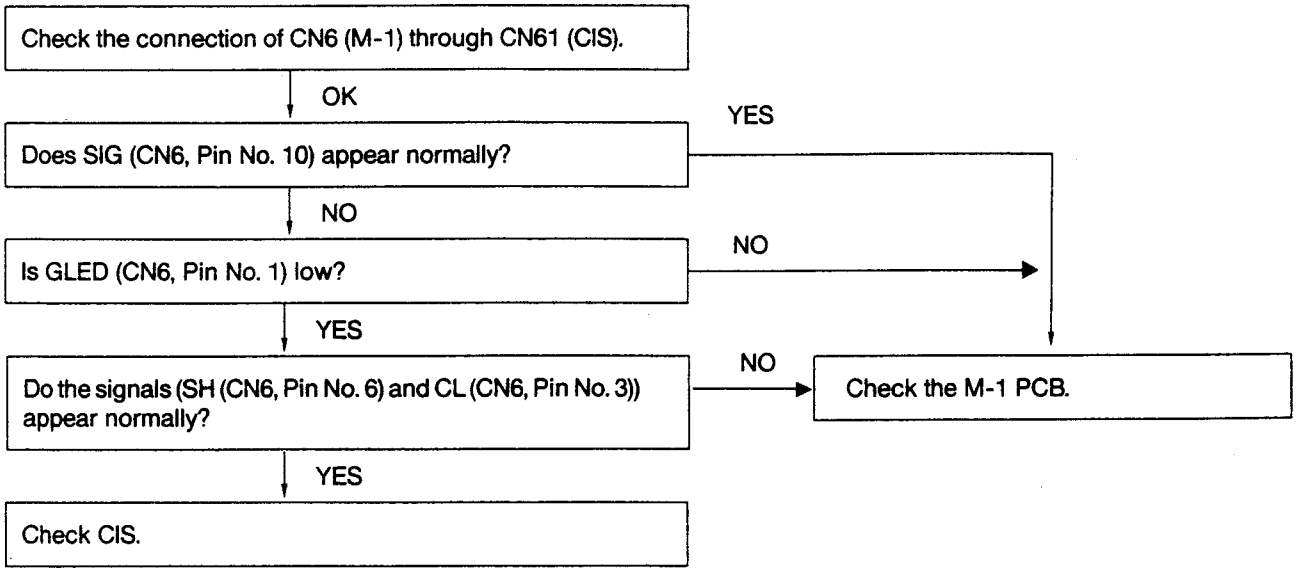
(5) No copy is made



(a) Printing Circuit (To be confirmed by the Head Test)

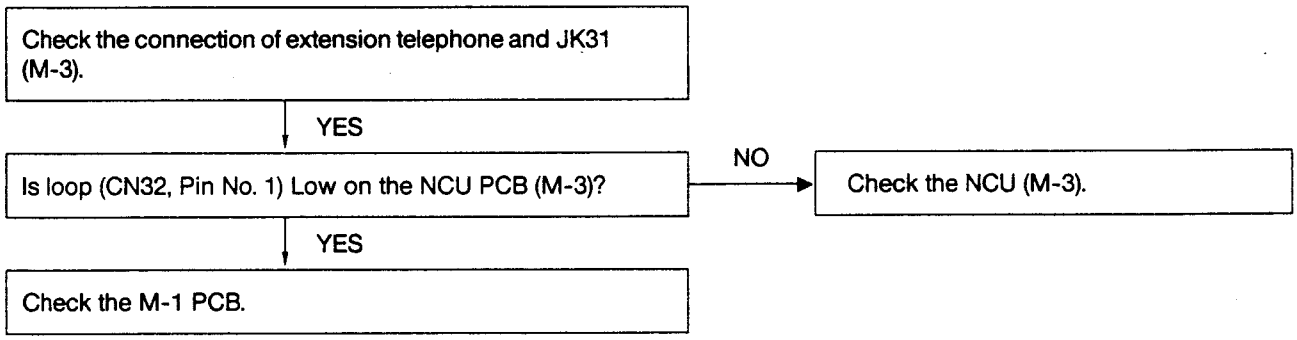

Check the connection of CN5 (M-1) through CN56 (Thermal Head).
OK
Does +24V appear at CN1, Pin No. 4 ?
NO
Check the Power Supply PCB (M-5).
YES
Does HVON (CN1, Pin No. 7) work properly (High at printing)?
NO
YES
Do the signals (DATA,/LATCH, CLK (CN5, Pin No. 2 - 4) appear normally?
NO
YES
Do the signals (/EN1 - 4 (CN5, Pin No. 5 - 8)) appear normally?
NO
Check the M-1 PCB.
YES
Check the Thermal Head.

(b) Reading Circuit (To be checked by Scanning Test)

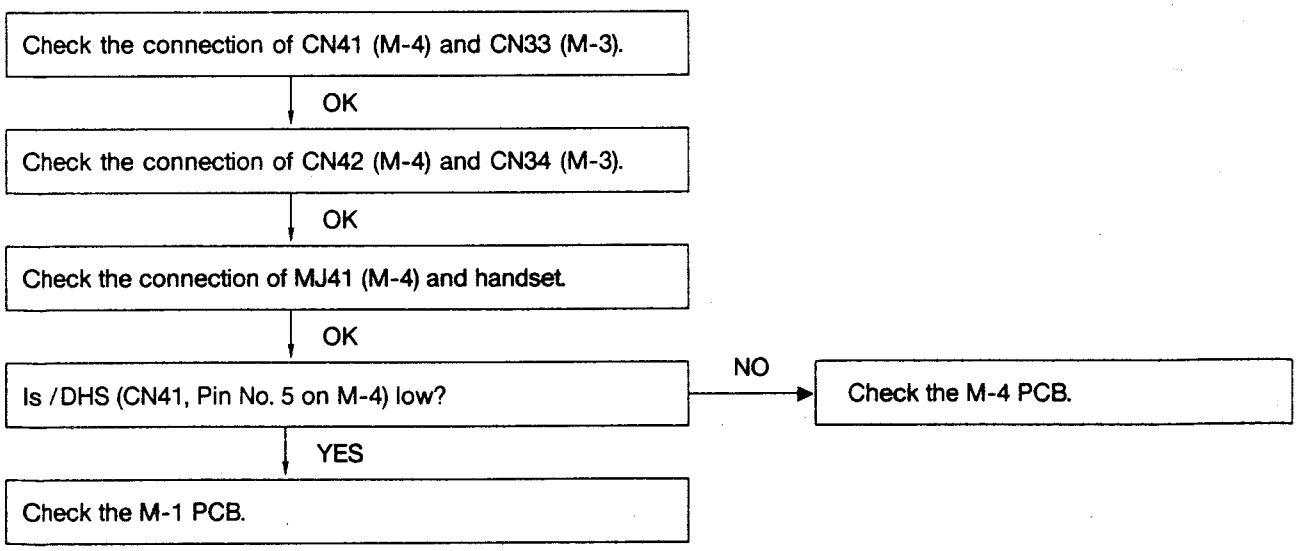

Check the connection of CN6 (M-1) through CN61 (CIS).
OK
Does SIG (CN6, Pin No. 10) appear normally?
YES
NO
Is GLED (CN6, Pin No. 1) low?
NO
YES
Do the signals (SH (CN6, Pin No. 6) and CL (CN6, Pin No. 3)) appear normally?
NO
Check the M-1 PCB.
YES
Check CIS.

(6) Can not enter the Tx./Rx. mode by pressing [START] switch under OFF-HOOK condition

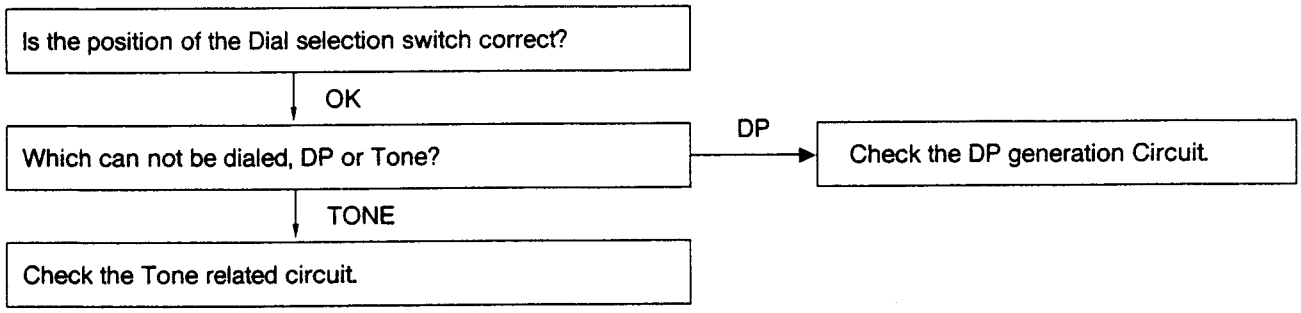
(a) In case of the extension telephone connected to the SFX-11


Check the connection of extension telephone and JK31 (M-3).
YES
Is loop (CN32, Pin No. 1) Low on the NCU PCB (M-3)?
NO
Check the NCU (M-3).
YES
Check the M-1 PCB.

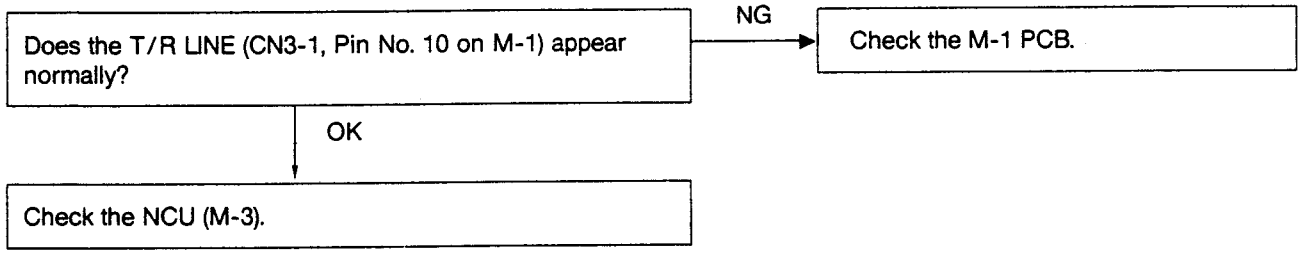
(b) In case of the Built-in telephone


Check the connection of CN41 (M-4) and CN33 (M-3).
OK
Check the connection of CN42 (M-4) and CN34 (M-3).
OK
Check the connection of MJ41 (M-4) and handset.
OK
Is /DHS (CN41, Pin No. 5 on M-4) low?
NO
Check the M-4 PCB.
YES
Check the M-1 PCB.

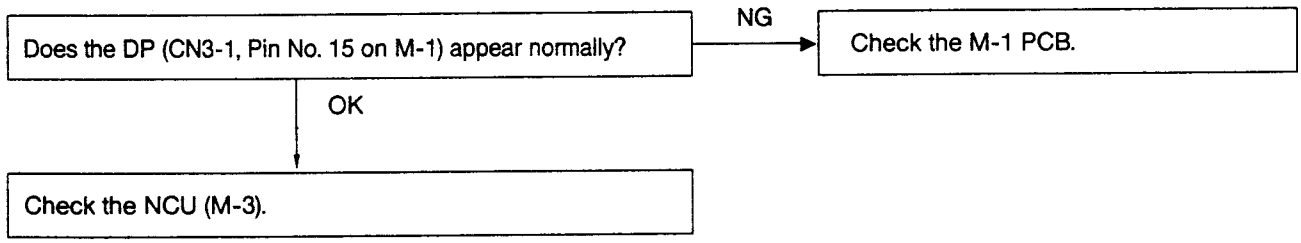
(7) No Dial out


Is the position of the Dial selection switch correct?
OK
Which can not be dialed, DP or Tone?
DP
Check the DP generation Circuit.
TONE
Check the Tone related circuit.

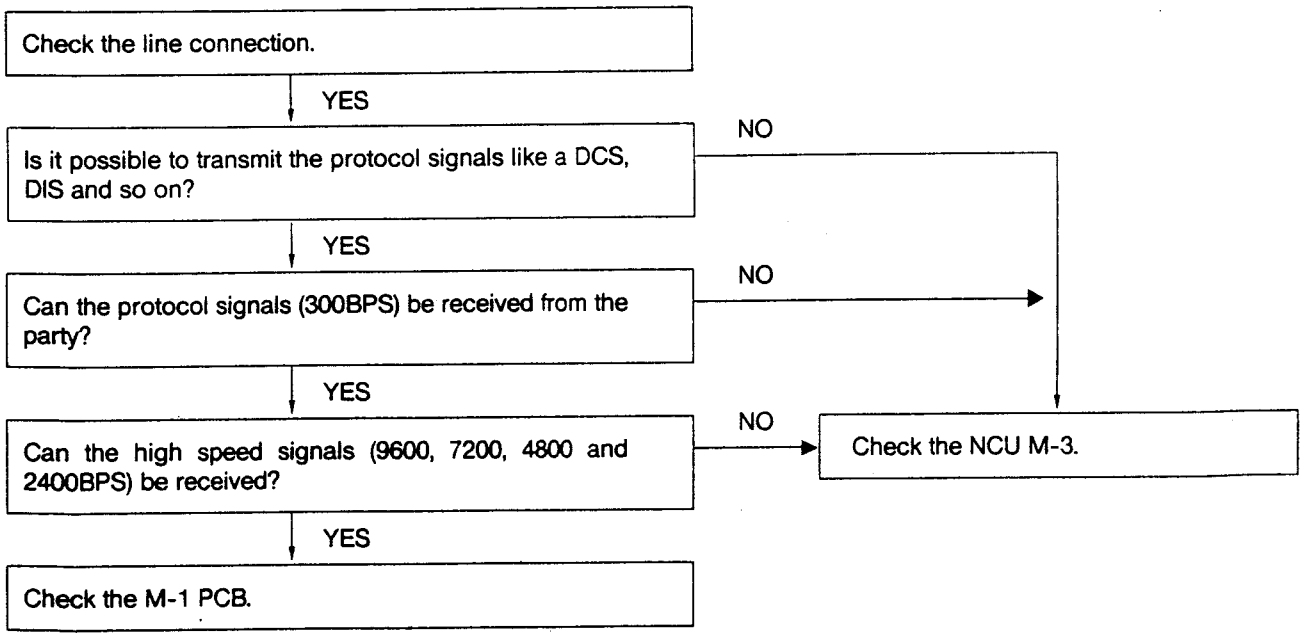
(a) In case of the TONE dialing



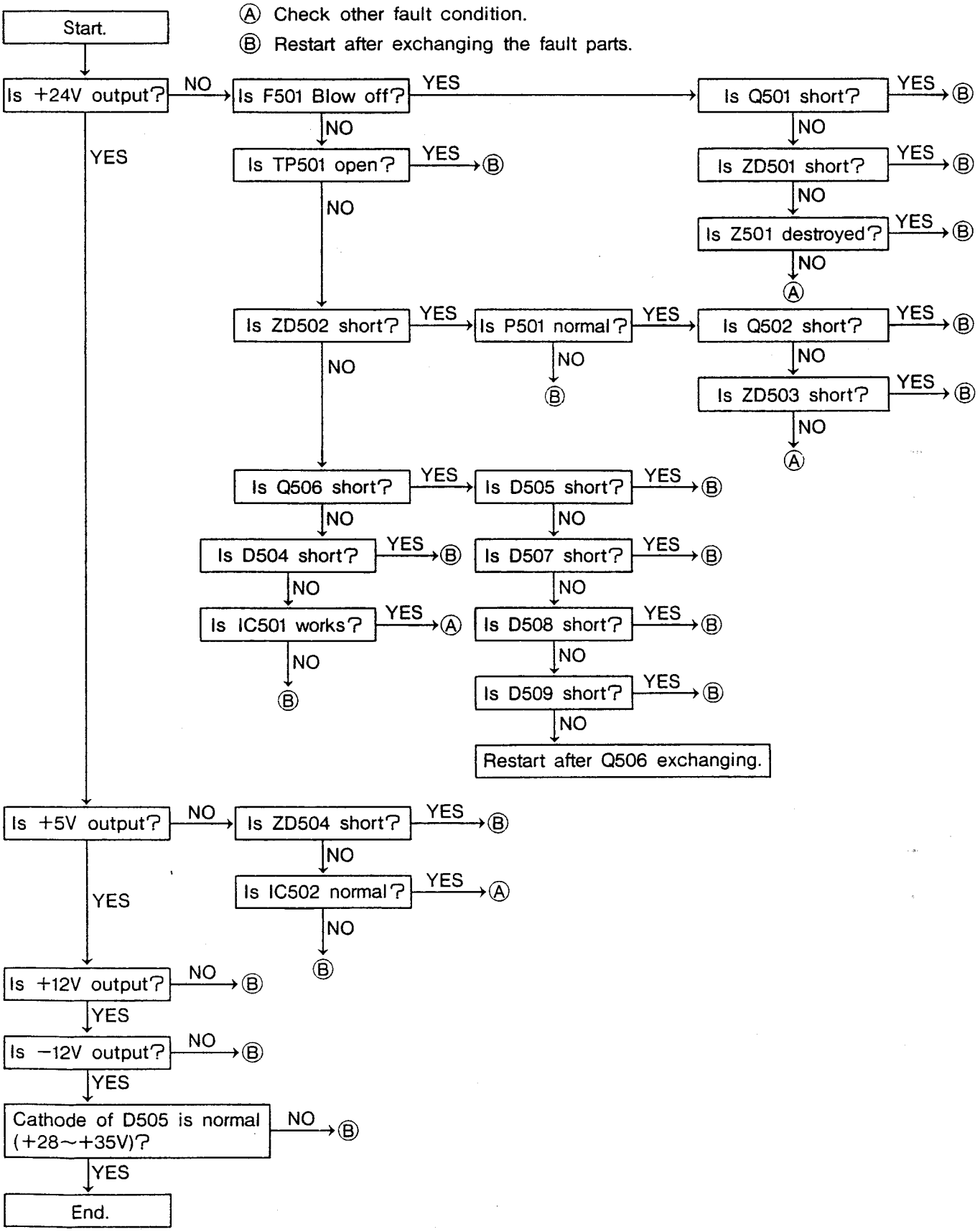
(b) In case of the DP dialing



(8) No Transmission and Reception but Copy operation is carried out normally


Check the line connection.
YES
Is it possible to transmit the protocol signals like a DCS, DIS and so on?
NO
YES
Can the protocol signals (300BPS) be received from the party?
NO
YES
Can the high speed signals (9600, 7200, 4800 and 2400BPS) be received?
NO
Check the NCU M-3.
YES
Check the M-1 PCB.

(9) Power supply check (M5)



5-4. Error code list

E10, E12 The other party does not respond

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
10	T1 time over	T, R	Even 35 ± 5 seconds passed after starting communication, no signal received from the party.
12	No responce on redial	T	No responce from the party even redialing of the timer transmission is carried out.

E20 ~ E27 Own machine troubles

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
20	Stop switch is ON	ALL	
21	Original jam	T	
23	No recording paper	R	
26	No original for timer transmission	T	
27	Timer operation is cancelled	TIMER	

E30 ~ E33 Image deficiency

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
30	Exceed the error line limitation	R	These errors may be caused by the S/N or deflection on the line. Check the disturbance and verify the incoming signal level using the level meter. Test the setting of the appropriate equalizer to compensate the line loss.
31	RTN transmission	R	
32	RTN reception	T	
33	Over 5 seconds per line	R	

E40, E41 Error in the other party

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
40	No recording paper in the other party	T	
41	No polling original in the other party	P-R	

E50 ~ E59 Cut-off other party

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
50	DCN reception or unknown command	T, R	Check the communication status between the parties. When STOP key is pressed by the transmitter, DCN signal comes after PIX. (PIX: picture signal)
51	Triple trial of DCS, DTC or NSS signal	T	Check the communication status between the parties. If the other party could not receive DCS signal, DIS signal would be retransmitted. In other cases, it is possible that the other party disconnected the line by some reasons.
52	T6 time over	R	Although MCF signal to respond MPS or CFR signal was transmitted, no carrier signal received within 6 seconds.
53	Carrier drop during Phase C	R	
54	Q, PRI-Q tripple trial	T	Q: EOP, MPS, EOP General terms
59	Multipage (mode change) T1 time over	T	

E60, E62 Incomplete transmission due to deficient line.

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
60	Fall-down Out	T	Training failure even with fall-down to 2400 bps.
62	Continuous 300 BPS	T, R	This error may be caused by the line noise.
71	Unmatching of key code	R	Telephone number does not match when the select reception is set.
77	40 ms of 9600 BPS only	T	

E80 ~ E85 DCS, NSS command error

CODE	CONTENTS	CLASSI-FICATION	SYMPTOM and NOTES
80	Other company's NSS	R	
81	No R command (receive command)	R	
82	Original size A3	R	
83	B4 command for A4 machine	R	
85	Minimum transmission time error	R	

6. REPAIRS

6-1. Removal of the main parts

(1) Removal of the right and left Cabinet.
  a) Open the operation panel. (Fig. 6-1)
  b) Press the open button to open the reception cover.
  c) Remove two(2) screws securing the right cabinet. (Fig. 6-1)
  d) Remove the right cabinet while holding up the front side.
  Pay attention to the scratch of the wires while removing it.
  e) Remove three(3) screws securing the left cabinet. (Fig. 6-1)

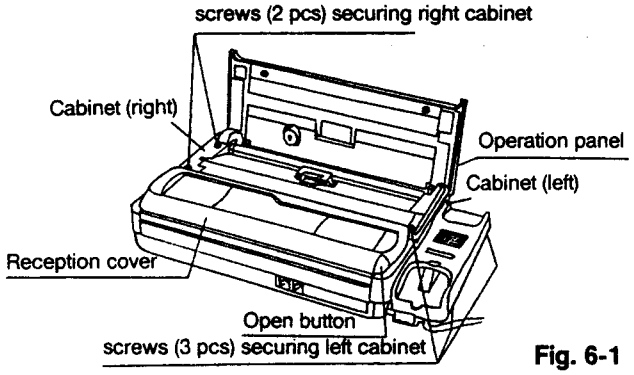


Fig. 6-1

(2) Removal of the transmission mechanical unit.
  a) Remove two screws securing the bottom cover. (Fig. 6-2)

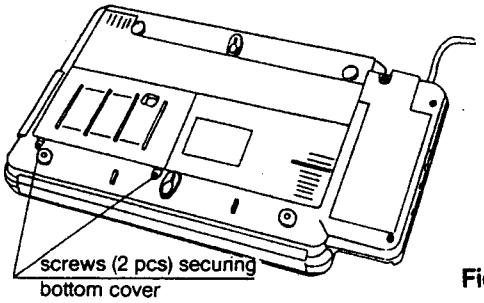


Fig. 6-2

  b) Remove the right and left cabinet. (Refer to 6-1-(1))
  c) Remove two screws securing the transmission mechanical unit. (Fig. 6-3)

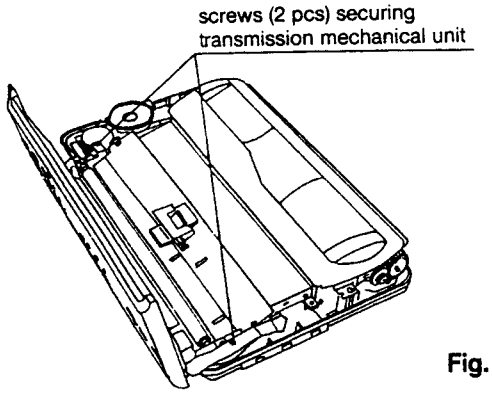


Fig. 6-3

  d) Disconnect the connectors (CN6, 7, 2/1, 2/2, 2/3, on main board (M-1)) and CN54 on the power supply board (M-5) while holding up the transmission mechanical unit. (Fig. 6-5)

(3) Removal of the receiving mechanical unit
  a) Remove the right and left cabinet. (Refer to 6-1-(1))
  b) Remove three screws securing the receiving mechanical unit. (Fig. 6-4)
  c) Disconnect the connectors (CN5, CN6 on main board (M-1)) and (CN52, CN53 on the power supply board (M-5)) while holding up the receiving mechanical unit. (Fig. 6-5)

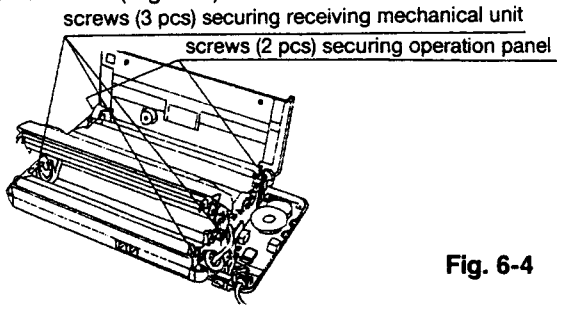


Fig. 6-4

(4) Removal of the main PCB (M-1)
  a) Remove the right and left cabinet. (Refer to 6-1-(1))
  b) Remove the transmission mechanical unit. (Refer to 6-1-(2))
  c) Disconnect the connectors CN3, CN5 and CN8 on the main PCB (M-1). (Fig. 6-5)
  d) Remove two screws securing the main PCB (M-1). (Fig. 6-5)
  e) The main PCB (M-1) and the power supply PCB (M-5) are directry connected through the connector. So, When removing the M-1, lift up the left side of M-1 while pressing down the M-5.

(5) Removal of the power supply PCB (M-5)
  a) Remove the right and left cabinet. (Refer to 6-1-(1))
  b) Remove the transmission mechanical unit. (Refer to 6-1-(2))
  c) Remove the main board (M-1). (Refer to 6-1-(4))
  d) Disconnect the CN52, CN53, and CN55 on the power supply board (M-5). (Fig. 6-5)
  e) Remove a screw securing earth wire. (Fig. 6-5)

(6) Removal of the NCU PCB (M-3)
  a) Remove the right and left cabinet. (Refer to 6-1-(1))
  b) Remove the receiving mechanical unit, then remove three screws securing the M-3. (Fig. 6-5)
  c) Disconnect the CN31, CN33, and CN34 on the M-3. (Fig. 6-5)

(7) Removal of the Tel. PCB (M-4).
  a) Remove the right and left cabinet. (Refer to 6-1-(1))
  b) Disconnect the CN41, CN42, and CN43 on the M-4. (Fig. 6-5)
  c) Remove three screws securing both the M-4 and the earth wire. (Fig. 6-5)

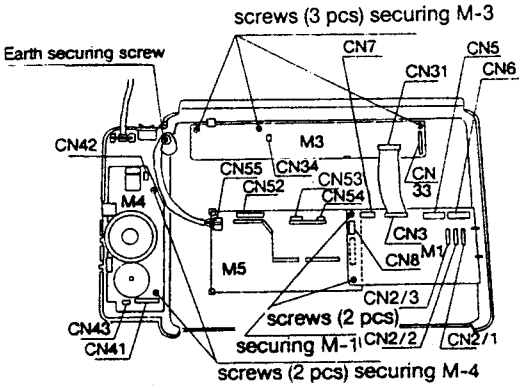


Fig. 6-5

(8) Removal of the operation PCB (M-2) and the LCD.
a) Remove the right and left cabinet. (Refer to 6-1-(1))
b) Remove the transmission mechanical unit. (Refer to 6-1-(2))
c) Remove two screws (one screw at each end) securing the operation panel. (Fig. 6-4)
d) Remove two screws securing the cover located back side of the operation panel. (Fig. 6-6)
e) Disconnect the CN24 on the M-2. (Fig. 6-7)
f) Remove eleven screws in total securing the M-2. (Fig. 6-7)
g) Remove two screws securing the LCD. (Fig. 6-7)

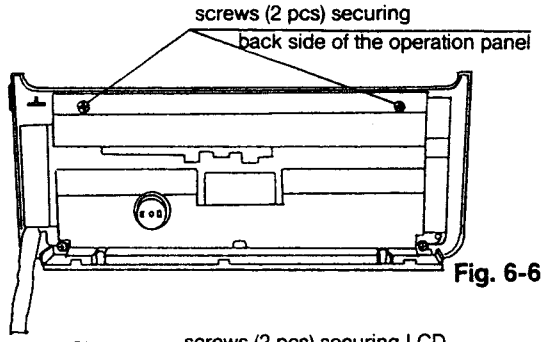


Fig. 6-6

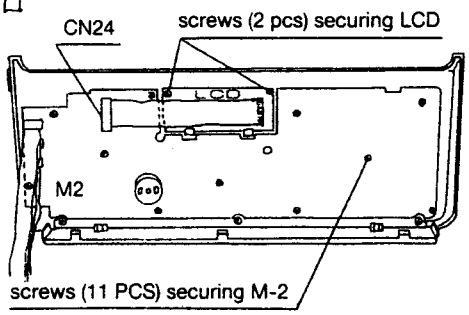


Fig. 6-7

6-2. Replacement of the main parts

(1) Replacement of the contact image sensor (CIS)
a) Remove the right and left cabinet. (Refer to 6-1-(1))
b) Remove the transmission mechanical unit. (Refer to 6-1-(2))
c) Turn over the transmission mechanical unit and remove the pressure spring from it. (Fig. 6-8)
d) Remove two screws (one screw at each end) securing the CIS. (Fig. 6-9)

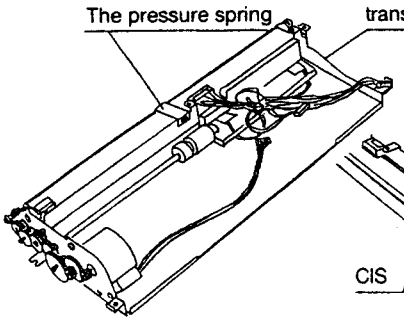


Fig. 6-8

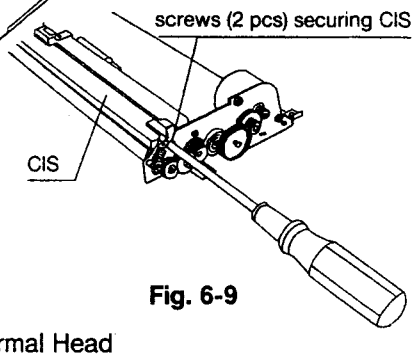


Fig. 6-9

(2) Replacement of the Thermal Head
a) Remove two screws securing the cover of the receiving mechanical unit. (Fig. 6-10)

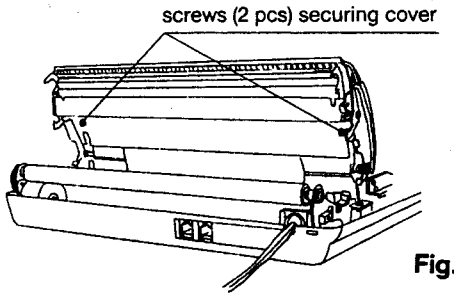


Fig. 6-10

b) Remove two screws (one screw at each end) securing the guide paper and remove the guide paper while opening a part of the boss at both ends. (Fig. 6-11)

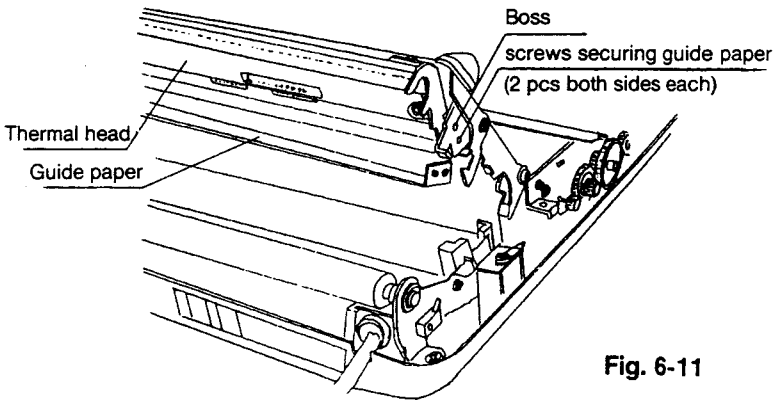


Fig. 6-11

c) Disconnect two connectors while taking out the thermal head. (Fig. 6-12)
d) Remove two screws securing the thermal head. (Fig. 6-12)

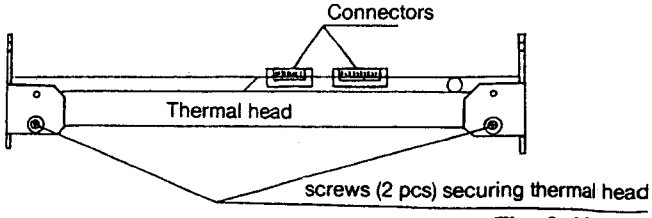


Fig. 6-12

e) Install the new thermal head and check the printing quality by performing a black copy or the head test before attaching the cover of the receiving mechanical unit.

≪Adjustment of the head position≫

a) Perform the thermal head test or make whole black copy by placing the black original.
   If the thermal head is placed on correct position, the print on the recording paper will be uniformly black.
b) If the print on the recording paper is poor, loosen two screws securing the thermal head and slide the thermal head by 0.2mm ~ 0.3mm, then tighten the screws.
c) Repeat the test as described step a) and b) above untill reaching the correct position.

   Notice that the thermal head movement range which is accepted for the black contrast is about 0.3mm.

(3) Replacement of the Automatic Document Feeder (ADF) unit

a) Open the operation panel.
b) Remove two screws securing the ADF unit. (Fig. 6-13)

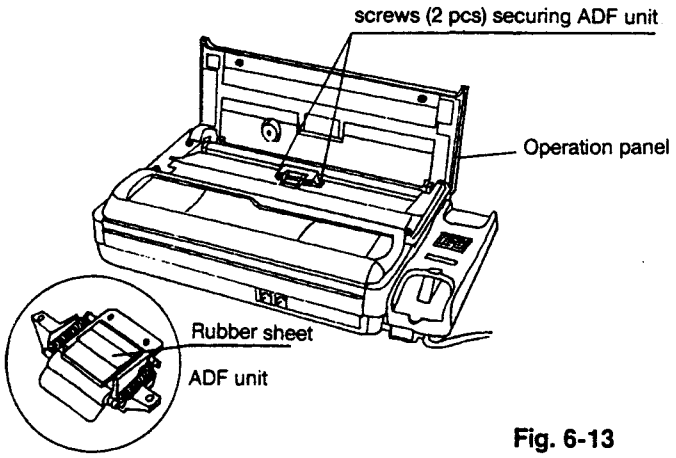


Fig. 6-13

c) Replace to a new ADF unit and check it out of the performance.

6-3. Operation of the Test Mode

(1) Setting up to the TEST MODE

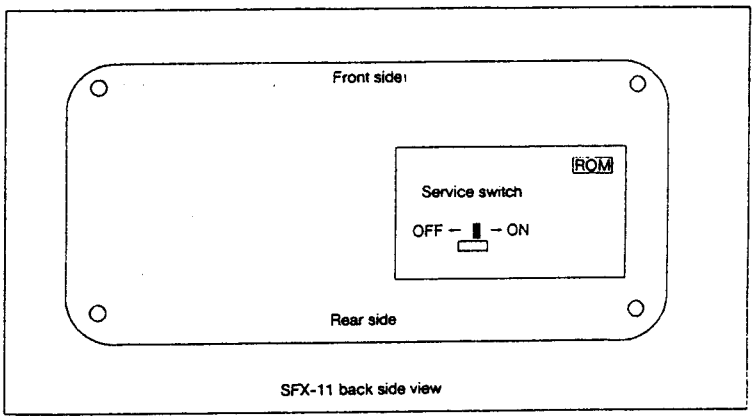
a) Slide the service switch to ON position.
(See bellow Figure)

b) Press [MENU] key 5 times.

20 Jul.'92 12:00

TEST MODE ?

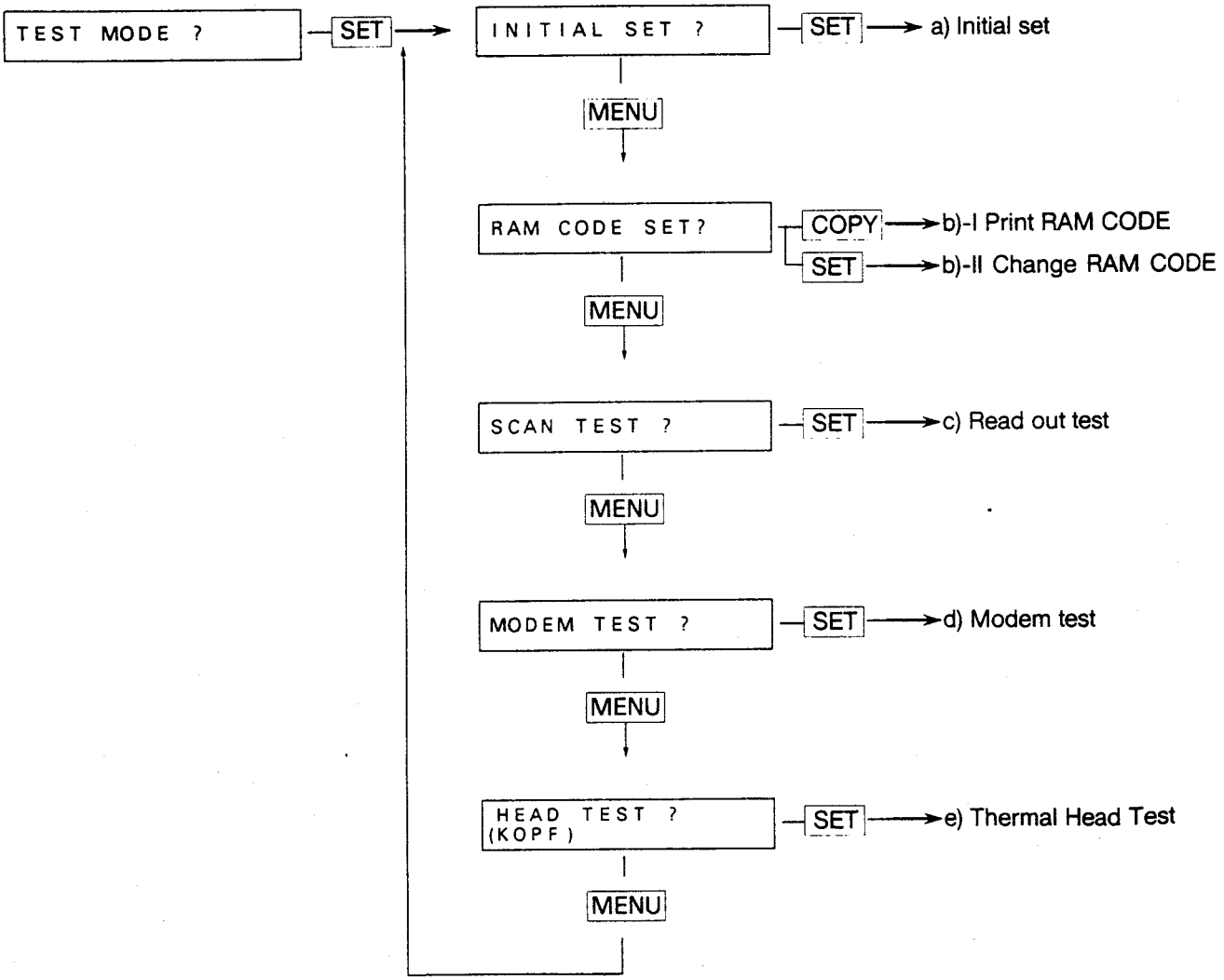
Make sure to turn the service switch OFF after finishing the test mode operation!



SFX-11 back side view

Under the bottom panel (sheet metal), the service switch is located on the main PCB (M-1).
Remove two screws to open the bottom panel.

Organization of the test mode



(2) Explanation of each test modes

a) Setting Initial

1. Setting up to test mode
   (Refer to 6-3-(1))

   TEST MODE ?

2. Press [SET]

   INITIAL SET ?

3. Press [SET]

   ALL CLEAR ?

4. Press [SET] or [MENU]

   Press [SET] to clear the all data → Return to Stand-by

   Press [MENU] to clear the data individually

   Each time pressing the [MENU], display scrolls as shown right.

   ① RAM CODE CLEAR?

   ② O.T & S.D CLEAR? (Z.W.)(K.W.)

   ③ REPORT DATA CLR? (BER.DAT.)

   Press [SET] to clear the data at the display → Return to Stand-by

b) RAM CODE SET

1. Setting up to the test mode
   (Refer to 6-3-(1))

   TEST MODE ?

2. Press [SET].

   INITIAL SET ?

3. Press [MENU].

   RAM CODE SET ?

4. Press [COPY] or [SET].

   Press [COPY] → Printing the RAM CODE LIST → Return to Stand-by

   Press [SET] → Setting the RAM CODE → Following Procedure

5. Enter the SW No. need to be changed
   Example: Press [6] · [1].

   SW 61 CODE

6. Press [SET].

   SW 61 CODE 00

7. Enter the SET CODE
   Example: Press [1].

   SW 61 CODE 01

8. Press [SET].
   The display is waiting for the next SW No. input.
   Repeat the steps from 5 to 8 on your demand.

   SW 66 CODE

9. Press [STOP/C] to escape from this mode.

   20 Jul.'92 12:00

c) SCANNING TEST

1. Setting up to the mode
   (Refer to 6-3-(1))

   TEST MODE ?

2. Press [SET].

   INITIAL SET ?

3. Press [MENU] twice.

4. Press [SET].

5. Press [COPY] to memorize the wave for a shading signal
   Return to Stand-by

SCAN TEST ?
** SCAN TEST **

The RAM CODE can also be accessed by key-in operation without setting up to the test mode as follows;

1. Press [MENU] 4 times.

2. Press [SET].

3. Press [MENU] 4 times.

4. Press [SET] while pressing down [START] key.

Now the RAM CODE can be accessed.

SET MODE ? (PROGRAMMIERUNG)
O.T DIAL SET (Z.W.)
FEATURE SW SET (SW SCHALT)
SW ■ CODE

d) MODEM TEST

1. Setting up to the test mode.
   (Refer to 6-3-(1))

2. Press [SET].

3. Press [MENU] three(3) times.

4. Press [SET].

TEST MODE ?
INITIAL SET ?
MODEM TEST ?
9600BPS (0)

Press [START] to appear the next signal.
Press [COPY] to appear the previous signal.

9600BPS(0) → 7200BPS(0) → 4800BPS(0) → 2400BPS(0) → 300BPS(0) → ┐
└ ← ┘
└→ 2100HZ → 1100HZ → PB 8 → NO SIGNAL → Return to the 1st stage (9600BPS(0))

The signals 9600, 7200, 4800, 2400 and 300BPS can be changed its carrier frequency pattern as shown below.

Press [ANSWER] to change its pattern at each stage.

(0) : 1850HZ continuously
(1) : 1650HZ continuously
(1 : 1) : 1650/1850 alternately (3.3msec/3.3msec)
(1 : 4) : 1650/1850 alternately (3.3msec/13.2msec)
(4 : 1) : 1650/1850 alternately (13.2msec/3.3msec)

] time is a case of 300BPS.

e) HEAD TEST

1. Setting up to the test mode.
   (Refer to 6-3-(1))
2. Press [SET].
3. Press [MENU] four(4) times.
4. Press [SET].
   A pattern of the head test starts to print on the recording paper.
   Press [STOP/C] to interrupt the printing.
5. Return to the Stand-by condition.

```
TEST MODE ?
```

```
INITIAL SET ?
```

```
HEAD TEST ?
(KOPF)
```

```
** HEAD TEST **
(KOPF)
```

7. Printing of the Reports and Lists

7-1 Activity Report

1. Press [MENU] three times.
2. Press [SET].
3. Activity Report is issued.

```
ACTIVITY REPORT?
(JOURNAL)
```

```
ACTIVITY REPORT
(JOURNAL)
```

(Example of the Activity Report)

```
                * * * JOURNAL-AUSDRUCK * * *
                21 Sep. '92  6:18

                                        SEND. GES. SEITEN    000000
                                        EMPF. GES. SEITEN    000000

   SEND.
Nr.    DATUM START   DAUER      PARTNER              SEITEN RESULTAT
                                                          FEHLER

   EMPF.
Nr.    DATUM START   DAUER      PARTNER              SEITEN RESULTAT
                                                          FEHLER
```

```
                * * * ACTIVITY REPORT * * *

                Jul.20 '92 12:00
                                        TRNS.TOTAL PAGE 000003
                                        RECV.TOTAL PAGE 000002

  TRNS.
No.    DATE      START     TIME      PARTNER      PAGE   RESULT
                                                        ERROR CODE
1      Jul.20     9:00     0'46      AAA            2      OK
2      Jul.20    10:00     0'25      BBB            1      OK

  RECV.
No.    DATE      START     TIME      PARTNER      PAGE   RESULT
                                                        ERROR CODE
1      Jul.20     9:30     0'24      CCC            1      OK
2      Jul.20    10:30     0'22      DDD            1      OK
```

Notice that if the service switch is on, the detail of the ERROR CODE is printed out (E50's → E51)

7-2 One-touch Dial List

1. Press [MENU] four times.
2. Press [SET].

```
SET MODE ?
(PROGRAMMIERUNG)
```

```
O.T DIAL SET
(Z.W.)
```

3. Press [COPY].

O.T DIAL LIST (Z.W.)

4. One-touch Dial List is issued.

(Example of the One-touch Dial List)

```
                    * * * ZIELWAHL-LISTE * * *
                    21 Sep.'92  6:19

     Nr.      PARTNER                NUMMER
```

```
                * * * ONETOUCH DIAL LIST * * *
                Jul.20 '92 12:00
No.             PARTY'S NAME           NUMBER
1               AAA                    000222333
2               BBB                    444555666
3               CCC                    777888999
```

7-3 Speed Dial List

1. Press [MENU] four times.
2. Press [SET].
3. Press [MENU].
4. Press [COPY].
5. Speed Dial List is issued.

SET MODE ? (PROGRAMMIERUNG)
O.T DIAL SET (Z.W.)
SPEED DIAL SET (K.W.)
S.D DIAL LIST (K.W.)

(Example of the Speed Dial List)

```
                    * * * KURZWAHL-LISTE * * *
                    21 Sep.'92  6:19

Nr.      PARTNER                NUMMER
```

```
                * * * SPEED DIAL LIST * * *

                Jul. 20 '92 12:00

No.             PARTY'S NAME           NUMBER
01              AAA                    000222333
02              BBB                    444555666
03              CCC                    777888999
```

7-4 Feature Switch List

1. Press [MENU] four times.
2. Press [SET].
3. Press [MENU] four times.
4. Press [COPY].
5. Feature Switch List is issued.

SET MODE ? (PROGRAMMIERUNG)
O.T DIAL SET (Z.W.)
FEATURE SW SET (SW SCHALT)
FEATURE SW LIST (SOFTSCHALT)

* * * SOFT-SCHALTER LISTE * * *

21 Sep.'92 6:19

FUNKTION	SCHALTER	STELLUNG	GRUNDSTELLUNG
PAUSENDAUER	01	03	03
WAHLWDH. ZEITVERSETZT	05	03	03
WAHLWDH. SOFORT	06	02	02
FERNSTART	08	00	00
FAX/TEL UMSCHALTER	09	03	03
MELODIE	10	02	02
GESCHLOSSENE BENUTZERGRUPPE	26	00	00
HALBTON-MUSTER	36	00	00
KONTURENSCHAERFE	37	00	00
ZOOM KOPIE	50	01	01
AUTO START	54	01	01

7-5 RAM CODE LIST

1. Turn on the Service Switch located on M-1 PCB. (See page 27.)
2. Press [MENU] five(5) times.
3. Press [SET].
4. Press [MENU].
5. Press [COPY].
6. RAM CODE List is issued.

TEST MODE ?

INITIAL SET ?

RAM CODE SET ?

RAM CODE LIST

* * * RAM CODE LISTE * * *

21 Sep.'92 6:19

FUNKTION	SCHALTER	STELLUNG	GRUNDSTELLUNG
PAUSENDAUER	01	03	03
HOERER ALARM	02	01	01
WAHLWDH. ZEITVERSETZT	05	03	03
WAHLWDH. SOFORT	06	02	02
FERNSTART	08	00	00
FAX/TEL UMSCHALTER	09	03	03
MELODIE	10	02	02
TASTATURTON	17	01	01
KOPFZEILE	20	01	01
GESCHLOSSENE BENUTZERGRUPPE	26	00	00
SENDEBERICHT	31	00	00
SENDEBERICHT ZEITVERSETZT	32	01	01
HALBTON-MUSTER	36	00	00
KONTURENSCHAERFE	37	00	00
ANT-PRUEFZEIT	49	00	00
ZOOM KOPIE	50	01	01
AUTO.START	54	01	01
COM. MODUS	60	00	00
STANDLEITUNG	61	00	00
WARTEN AUF ANTWORT	66	06	06
EMPF.RATE	67	01	01
CED FREQU.	68	00	00
TCF PRUEF. INTERV.	69	00	00
FSK PRUEFEN	70	01	01
FEHLER RATE	71	05	05
FOLGEFEHLER (NRML)	72	03	03
FOLGEFEHLER (FEIN)	73	06	06
TRAEGER AUS PRUEFEN	74	06	06
UET RATE	75	03	03
KENNUNG SENDEN	76	01	01
DCS SENDEN	77	00	00
DCS-TR INTERVALL	78	00	00
RTC-Q INTERVALL	79	00	00
FSK INTERVALL	81	00	00
SENDEPEGEL	82	06	06
DTMF-PEGEL	83	04	04
KABEL EQUALIZER	84	01	01
SANYO MODE	88	00	00

7-6 Transmission Report

It can be set to issue or non-issue according to the setting of the RAM CODE SW No. 31. The initial factory preset is the non-issue position (SET CODE : 00).

SW. No. 31 : 00 (Non issue)
: 01 (Issue)
: 02 (Issue only when the communication error occurs)

Once the SW. No. 31 is set to 01 or 02, the transmission report is issued accordingly.

```
                    * * * SENDEBERICHT * * *
                    21 Sep.'92  6:21

          DATUM START   DAUER      PARTNER                  SEITEN RESULTAT
                                                                    FEHLER
          21 Sep.  6:21    0'04    **********                    0    FL20
```

```
                  * * * TRANSMISSION REPORT * * *
                  Jul.20 '92 12:31

DATE      START     TIME          PARTNER              PAGE   RESULT
                                                              ERROR CODE
JuL.20    12:30     0'27          DEALER A              1     OK
```

7-7 Timer Transmission Report

It can be set to issue or non-issue according to the setting of the RAM CODE SW No. 32.
The initial factory preset is the issue position (SET CODE : 01).

SW. No. 32 : 00 (non issue)
: 01 (issue)

Once the SW. No. 32 is set to 00, timer transmission report is not issued.

```
                  * * * ZEITV. SENDEBERICHT * * *
                  21 Sep.'92  6:22

                                        EINGEST. ZEIT  11:11
      Nr.  START        PARTNER                SEITEN RESULTAT
                                                      FEHLER
```

```
                  * * * TIMER TRNS. REPORT * * *
                  Jul.20 '92 12:31

No.       START        PARTNER        SET TIME    12:30
                                      PAGE        RESULT
                                                  ERROR CODE
1         12:30        DEALER A        1          OK
```

8. RAM CODE LIST and Its Explanation

* * * SW No. 01 through 54 are opened to the users * * *

SW No.	SETTING ITEM	CONTENTS	SETTING NO.	FACT. SET	EXPLANATION
01	Pause Time	2 - 12 sec.	02 - 12	03	Setting No. X 1sec. = Pause time to be set The initial factory preset of a pause is 3.0 sec.
02	Hook-up alarm	OFF ON	00 01	01	
05	Number of Redial for Timer Tx.	No Redial 1- time 2- times 3- times	00 01 02 03	03	This is to set the number of repeat call attempts when the called party is busy or no-responce. (3 - 4 min. interval between each call)
06	Number of Redial for immidiate TX using O.T/Speed/ Num. Key	No Redial 1- time 2- times 3- times	00 01 02 03	02	This is to set the number of repeat call attempts when the called party is busy or no-responce (2 - 3 min. interval between each call) This is also effective for Polling Rx.
08	Remote Rx. feature	OFF DP DTMF	00 01 02	00	OFF : No remote reception is performed DP, DTMF : Dialing method of the extention telephone for the remote reception.
09	Number of rings that sounds after the SFX-11 is connected to the line	No Ringing 3- times 5- times 7- times 9- times 11- times	00 01 02 03 04 05	03	Number of rings that sounds before the SFX-11 switches from telephone mode to fax reception mode when a manual fax transmission or voice call is received in the AUTO mode.
10	Music on hold	No Music MINUET GREENSLEEVES	00 01 02	02	This is to set the music released to the telephone line when the conversation is put on hold.
17	Key Operation beeps	OFF ON	00 01	01	This is to set the key operation sound whether it generates or not.
20	Header print ON/OFF	OFF ON (outside) ON (inside)	00 01 02	01	Determines whether your station name, fax number and date/time are printed on the header.
26	Closed reception	OFF ON	00 01	00	Determines whether reception is restricted to programmed fax number.
31	Tx. Report	OFF ON ON	00 01 02	00	00 : No Tx. report is issued. 01 : Tx. report is issued after each Tx. 02 : Tx. report is issued only when Tx. error occurs.
32	Timer Tx. Report	OFF ON	00 01	01	Determines whether Tx. report issues or not after the timer Tx.
36	Half-tone pattern	Pattern 0 Pattern 1	00 01	00	Determines the Dither pattern used for a Half-tone transmission and copy.
37	Edge enhancement for Half-tone	Enhancement level can be set by 4-steps	00 01 02 03	00	To enhance character edge, set a higher number.

SW No.	SETTING ITEM	CONTENTS	SETTING NO.	FACT. SET	EXPLANATION
49	Time for checking CNG and silence in ANS. mode	∞ 10 - 200 sec.	00 01 - 20	00	Time length during which SFX-11 (in the ANSWER mode) is allowed to detect whether the incomming signal is a automatic fax transmission or manual fax transmission.
50	Zoom copy	OFF ON	00 01	01	Determine whether enlargement/reduction copy is performed or not.
54	Auto progress Tx.	OFF ON	00 01	01	OFF(00): Need to pressing START key for manual Tx. ON (01): No need to pressing START key for manual Tx.

Explanation of SW No. 36 (Half-tone pattern)

PATTERN	Tx. TIME	PRINT QUALITY	EXPLANATION
0	◎	△	To be compared with pattern 1, the Tx. speed is faster but the image quality is not as good as pattern 1.
1	△	◎	To be compared with pattern 0, the Tx. speed is a little bit slower but the image quality is higher.

* * * SW No. 60 through 88 are only for service engineer * * *

SW No.	SETTING ITEM	CONTENTS	SETTING NO.	FACT. SET	EXPLANATION
60	Communication mode	Auto G3	00 01	00	This RAM SW. fixes the communication mode and is normally set on AUTO.
61	Manual Hook up	OFF ON	00 01	00	START switch is effective without lifting the handset when the setting is ON (SETTING No. 00). Used for hooking up 2 facsimiles without connecting telephone line.
66	CED check time	35 sec. 38.5 sec. 42 sec. 45.5 sec. 49 sec. 52.5 sec. 56 sec. 59.5 sec. ⋮ 91 sec.	00 01 02 03 04 05 06 07 ⋮ 16	06	Sets the waiting time for the CED signal after transmitting the dial signal. 3.5 sec. step
67	Receive start speed	4800BPS 9600BPS	00 01	01	At 4800BPS, this facsimile has more tolerance against the line noise but the receiving start speed is a half of 9600BPS. When the receiving error occurs frequently, set to 4800BPS.
68	CED Frequency	2100 Hz 1100 Hz	00 01	00	When transmitting overseas, this work to guard against interchange echoes, if set to 1100 Hz (SETTING No. 01).

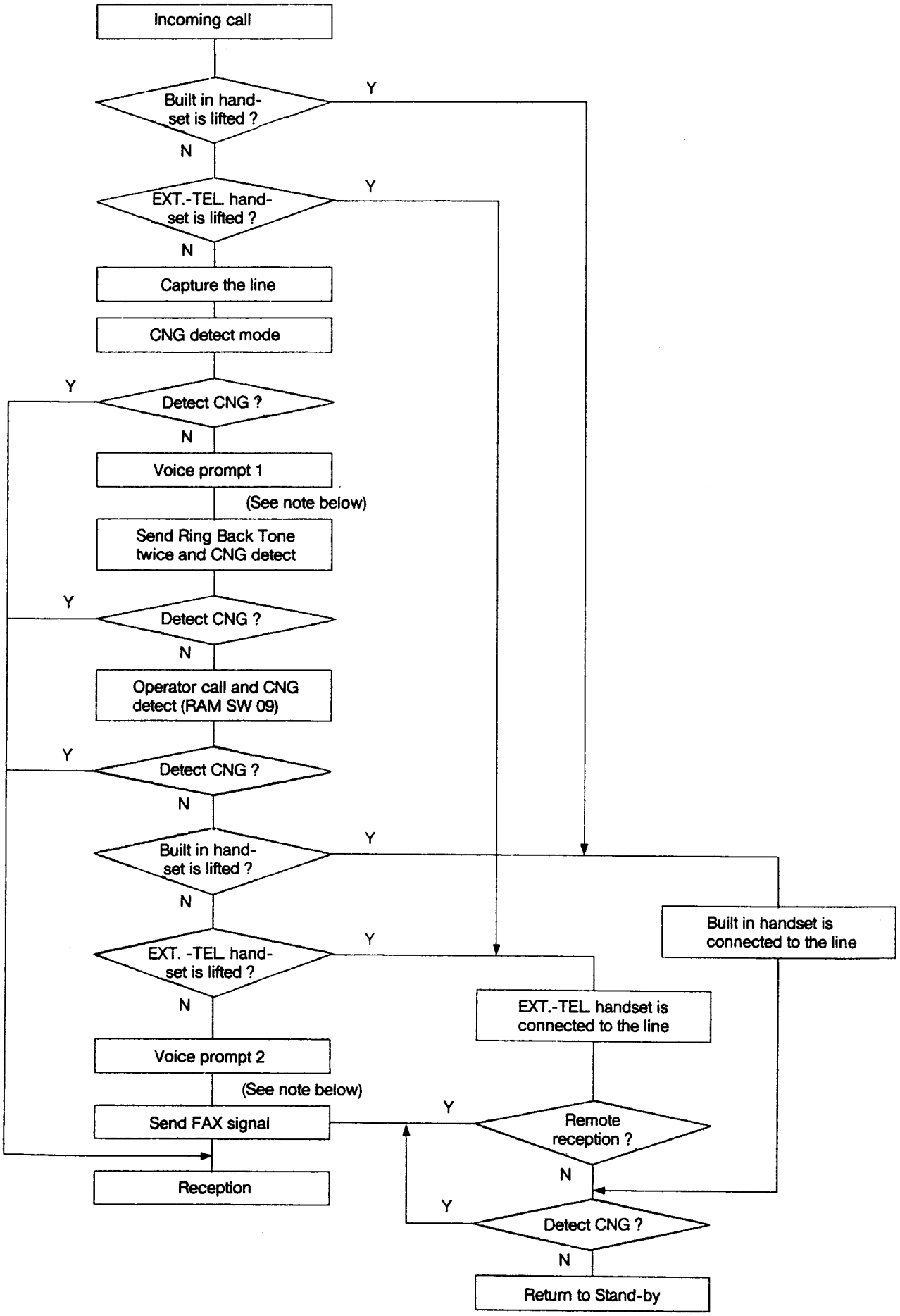
SW No.	SETTING ITEM	CONTENTS	SETTING NO.	FACT. SET	EXPLANATION
69	TCF check interval	V29 V27 5 ms 115 ms 60 ms 170 ms 100 ms 210 ms	 00 01 02	00	Set the time from the recognition of the training by the Modem to starting the training check (TCF). Set to correct the mismatching of between Sanyo and other manufacturer's machine.
70	FSK check before phase C	OFF ON	00 01	01	When this unit can not receive the high speed training signal by the echo of CFR (E-52), set to off (SETTING No. 00).
71	Allowance of Error lines	5% 6% 7% 8% 9% 10~30%	00 01 02 03 04 05~25	05 (10%)	When receiving consecutive error lines exceeding the setting number, this unit moves to the sequence of bad copy quality and send RTN to transmitter. When the E-30 occurs frequently, set the number to higher value but printing quality is getting worse.
72	Continuous Error line (STD)	3 lines 4 lines 5 lines 6 ~23 lines	00 01 02 03 ~ 20	03	
73	Continuous Error line	6 lines 7 lines 8 lines 9 ~ 26 lines	00 01 02 03 ~ 20	06	
74	Carrier off detection	0 sec. 0.5 sec. 1.0 sec. 1.5 sec. 2.0 sec. 2.5 sec. 3.0 sec. 3.5 sec. 4.0 sec. 4.5 sec. 5.0 sec. 5.5 sec. 6.0 sec.	00 01 02 03 04 05 06 07 08 09 10 11 12	06	This is to set the allowance of the carrier off duration. If the carrier off duration is less than the setting value, reception is continued.
75	Tx. start speed	2400BPS 4800BPS 7200BPS 9600BPS	00 01 02 03	03	This is to set the training start speed of the MODEM. It is recommended that if Tx. error occurs frequently set to 4800BPS.
76	TSI	Non Tx. Always Tx. only when CSI receives	00 01 02	01	This is to set the condition of transmitting TSI.
77	DCS timing	1st DIS 2nd DIS	00 01	00	This is to set the responce of DCS corresponding to DIS. In order to consider the influence of the echo while transmitting to overseas fax. 2nd DIS (SETTING No. 01) might be effective.
78	Interval between DCS and Training	75 msec. 0.3 sec. 0.5 sec.	00 01 02	00	This is to set the interval between DCS and training, for the purpose of correcting the mismatching of between Sanyo and other manufacturers machine. CCITT recommendation is 75 ± 20 ms.

SW No.	SETTING ITEM	CONTENTS	SETTING NO.	FACT. SET	EXPLANATION
79	Interval between RTC and Q	75 msec. 0.3 sec. 0.5 sec.	00 01 02	00	This is to set the interval between RTC and Q, for the purpose of correcting the mismatching of between Sanyo and other manufacturers machine. CCITT recommendation is 75 ± 20 ms.
81	FSK delay	0 msec. 100 msec. 200 msec. 300 msec. 400 msec.	00 01 02 03 04	00	This is to set the delay for correcting the mismatching of between Sanyo and other manufacturers machine.
82	Tx. Attenuator	0 to 15 db	00 to 15	06	This is to set the transmission level attenuation for control and video signals.
83	DTMF Attenuator	0 to 15 db	00 to 15	04	This is to set the transmission level attenuation for Dual Tone Modulated Frequency (DTMF) dial.
84	Cable Equalizer	0 km 1.8 km 3.6 km 5.6 km	00 01 02 03	01	An equalizer which adjusts the characteristics of the non-loaded cable between fax and exchange station. Set in response to the distance to the exchange.
88	Closed Reception Sanyo free mode	OFF ON	00 01	00	Even when the select reception is set, reception is free from any Sanyo fax machines at ON (SETTING No. 01).

* In case of fixing the overseas transmission mode, set to SW No. 71 to 01, SW No. 78 and 79 to 01 or 02.
* The SW No. 60 through 88 are classified as follows.
  - 60.61 : For testing purpose
  - 66 : For checking the party's responce
  - 67 through 74 : Countermeasure for the reception problem
  - 75 through 81 : Countermeasure for the transmission problem
  - 82 through 84 : Countermeasure for the problem caused by line characteristics
  - 88 : Others

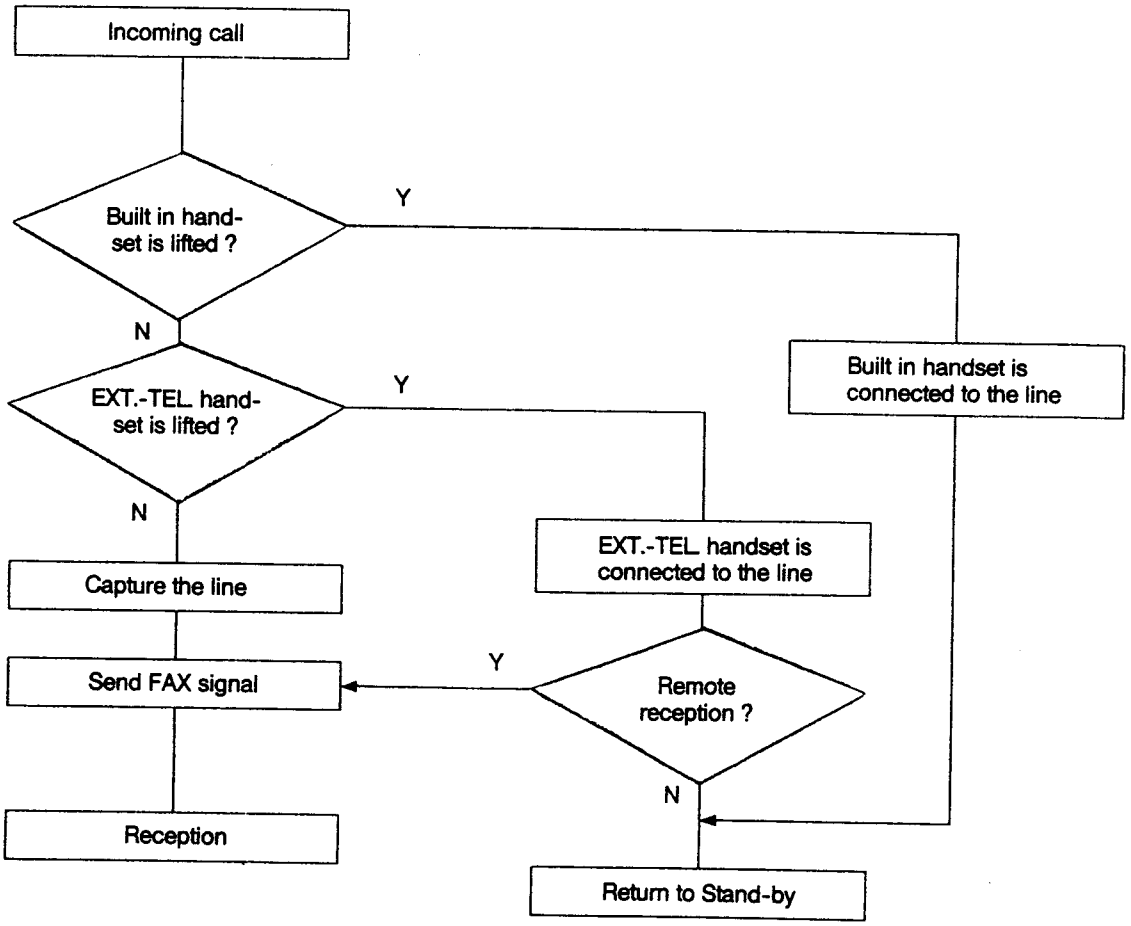
9. AUTO RECEPTION MODE DESCRIPTION

(1) Auto reception with FAX-TEL switchover function is ON

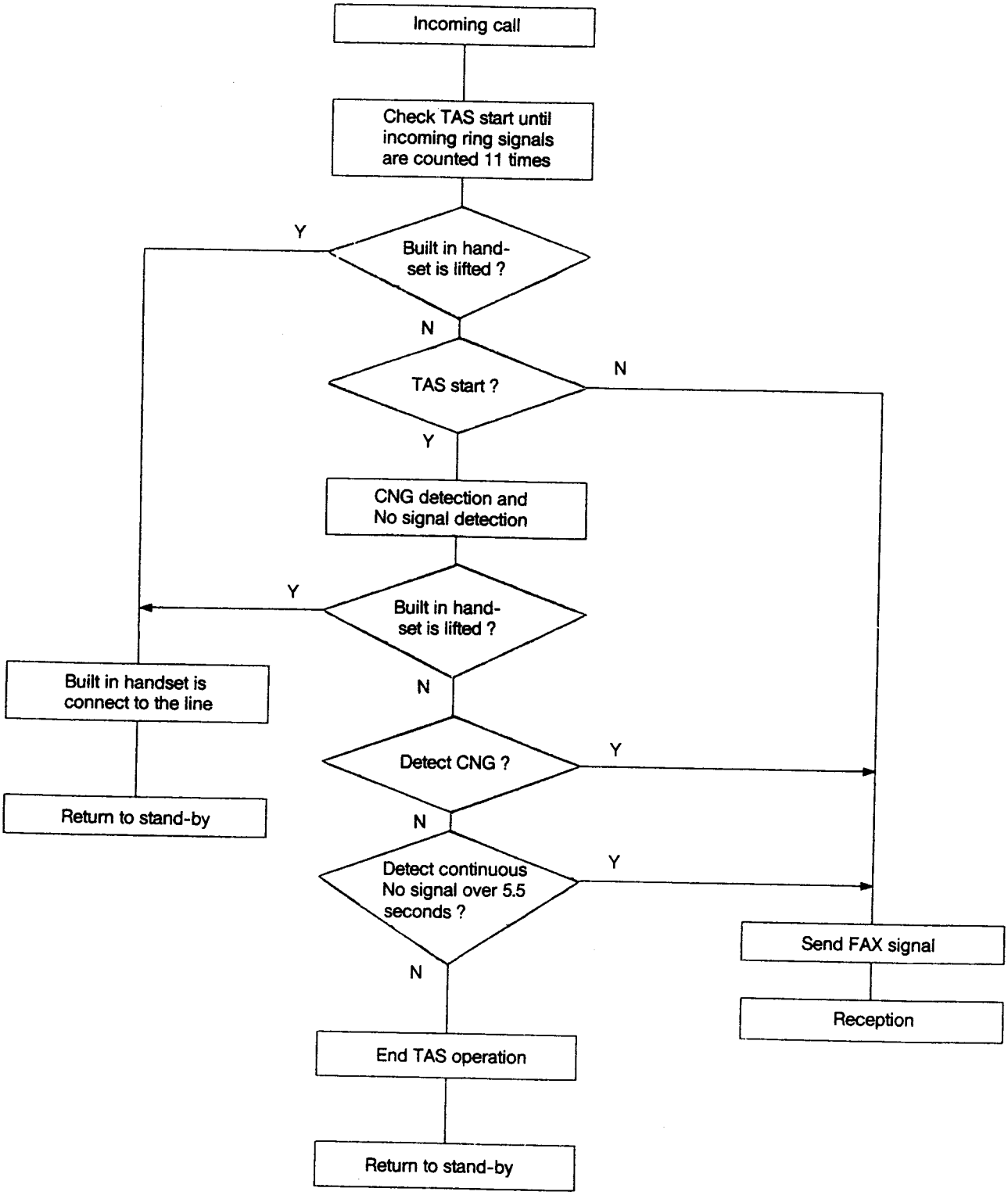


Note: The following messages are released to the line as Voice prompt.
- Voice prompt 1: Please wait for a moment.
- Voice prompt 2: No one is here now, however if you wish to send a fax, please transmit at the tone.

(2) Auto reception with FAX-TEL switchover function is OFF

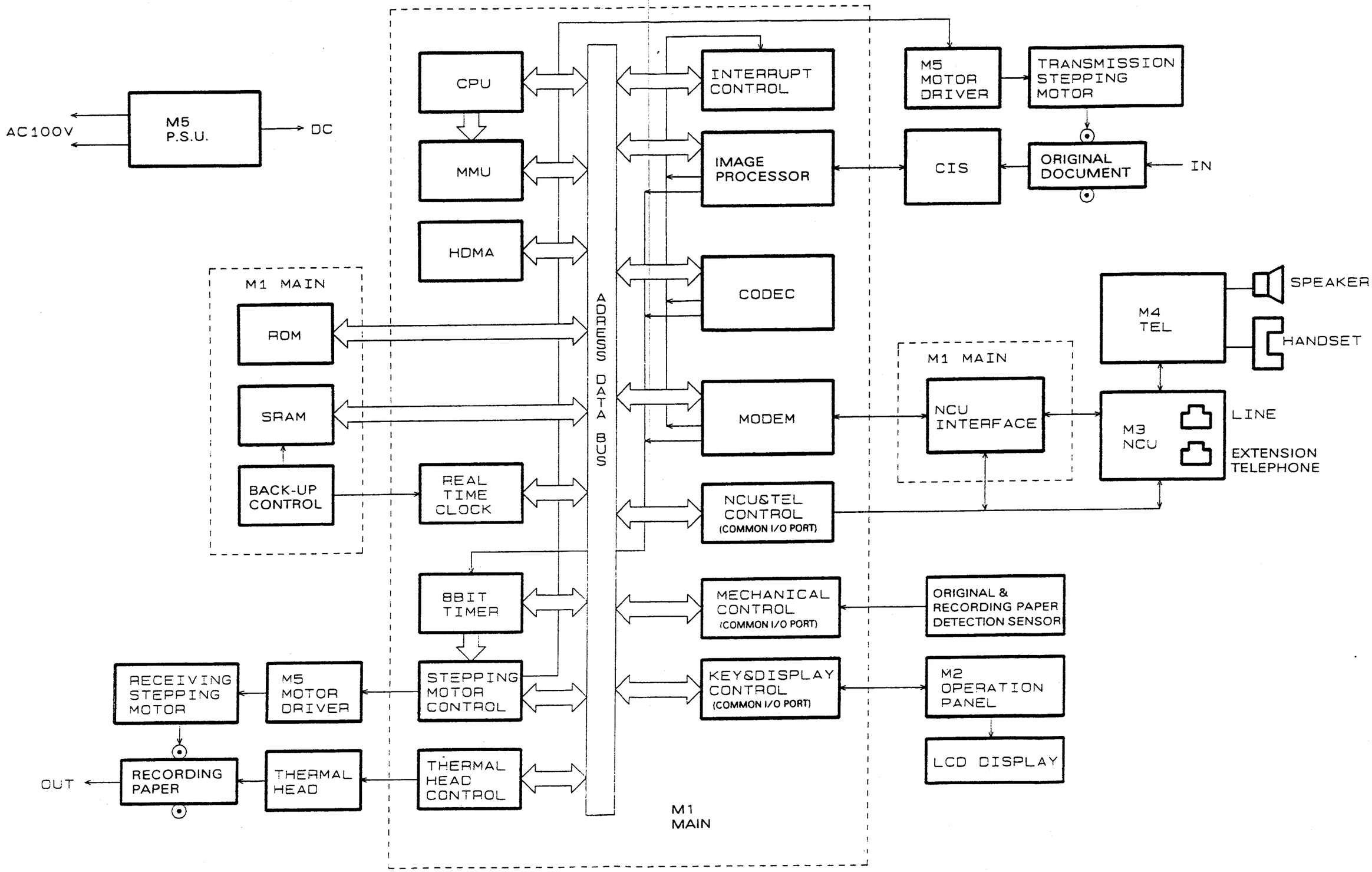


(3) Answer reception mode



10. BLOCK DIAGRAM AND THE SIGNAL FLOW

10-1. BLOCK DIAGRAM



10-2. CIRCUIT DESCRIPTION

(1) The signal flow

(a) Transmission

① The image data of the original conveyed through the reading mechanism is read by the Contact Image Sensor (CIS) and this data is transfered to M1 PCB.

② In the M1 PCB, the data is amplified, rectified and turned into two values (black and white) or halftone signal through the image Processing, then this data is written into one line memory (SRAM).

③ The CPU reads out and encodes the data written in line memory, then stores the data into the FIFO (SRAM). At the same time, the CPU transfers one byte data in the FIFO to the MODEM with an interruption signal requested by the MODEM.

④ Through repetition of above operations, the image data for each line is encoded, modulated through the MODEM, and transmitted over the line through the NCU.

(b) Reception

① The signals received from the line enter the MODEM through the NCU.

② In the same manner as in transmission, the coded data which is demodulated by the MODEM is stored into the FIFO as one byte data with an interruption signal requested by the MODEM.

③ The CPU reads out and decodes each one bit of the data from the FIFO, and outputs to the thermal head when each one bit portion of decoded data is aligned as one line data.

④ Through repetition of above operation, the received data is printed to the recording paper.

(c) COPY

① In the same manner as image reading in transmission, the image data read by the CIS is turned into two values (black and white) or halftone signal, then it is stored into one line memory (SRAM).

② The CPU reads out the data of one line memory, and outputs the data of each line to the thermal head.

Power Supply Circuit (M5)

Switching regulator type power supply circuit outputs +24V, ±12V and +5V.

±12V and +5V are for the Main Board (M1:CPU), +24V is for the NCU circuit, pulse motors, LED array and thermal Head as HV.

HV is controlled by the signal (HVON) from CPU.

(A) Noise Filter

Line filter circuit suppress the internal noise flowing out and external noise flowing in.

(L501, L502, C501, C503~C505)

(B) Rectification and Smoothing (Primary)

Bridge rectifier diode and smoothing capacitor make DC High voltage, and supplied for switching circuit.

(D501, C509)

(C) Switching Circuit

Transformer transfers the primary energy to secondary circuit by switching oscillation of transistor.

(T501, Q501)

(D) Switching control circuit

Switching control IC works as follows.

- Keep the switching frequency constant.
- Stabilize the output +24V condition.
- Protect from abnormal over load condition.

(IC501)

(E) Rectification and Smoothing (Secondary)

AC low voltage generated in secondary windings of transformer are rectified and smoothed by the diodes and the capacitors.

+24V Line ····· (D504, C517)
+ 5V Line ····· (D507, C525)
+12V Line ····· (D508, C528)
−12V Line ····· (D509, C529)

(F) Voltage Regulators

+5V is regulated by 3 pins type voltage regulators.

(IC502)

(G) Comparator

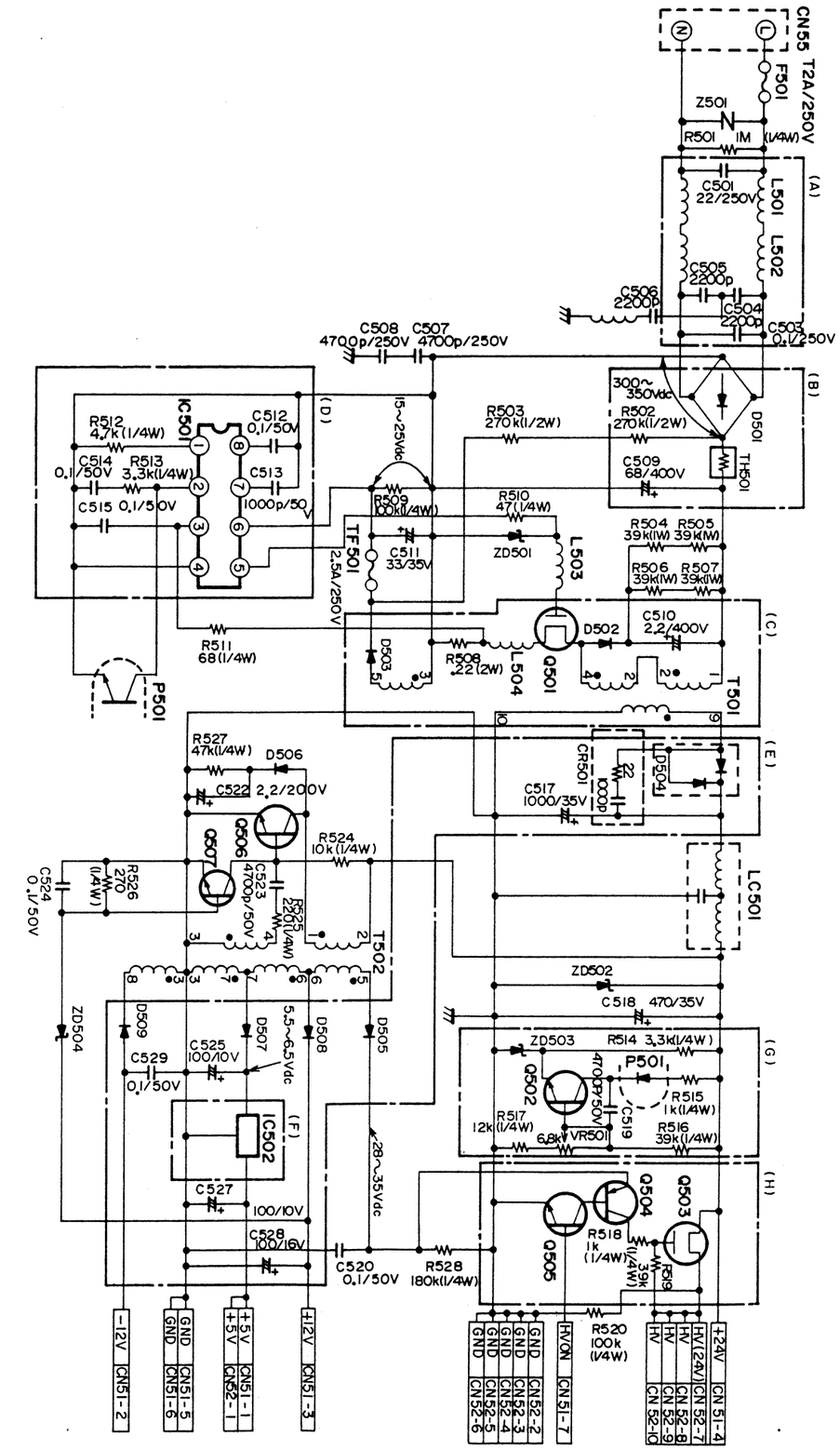
Comparator circuit feeds back the fluctuation of the output +24V to the switching control circuit through Photo-Isolator.

(Q502, ZD503, P501)

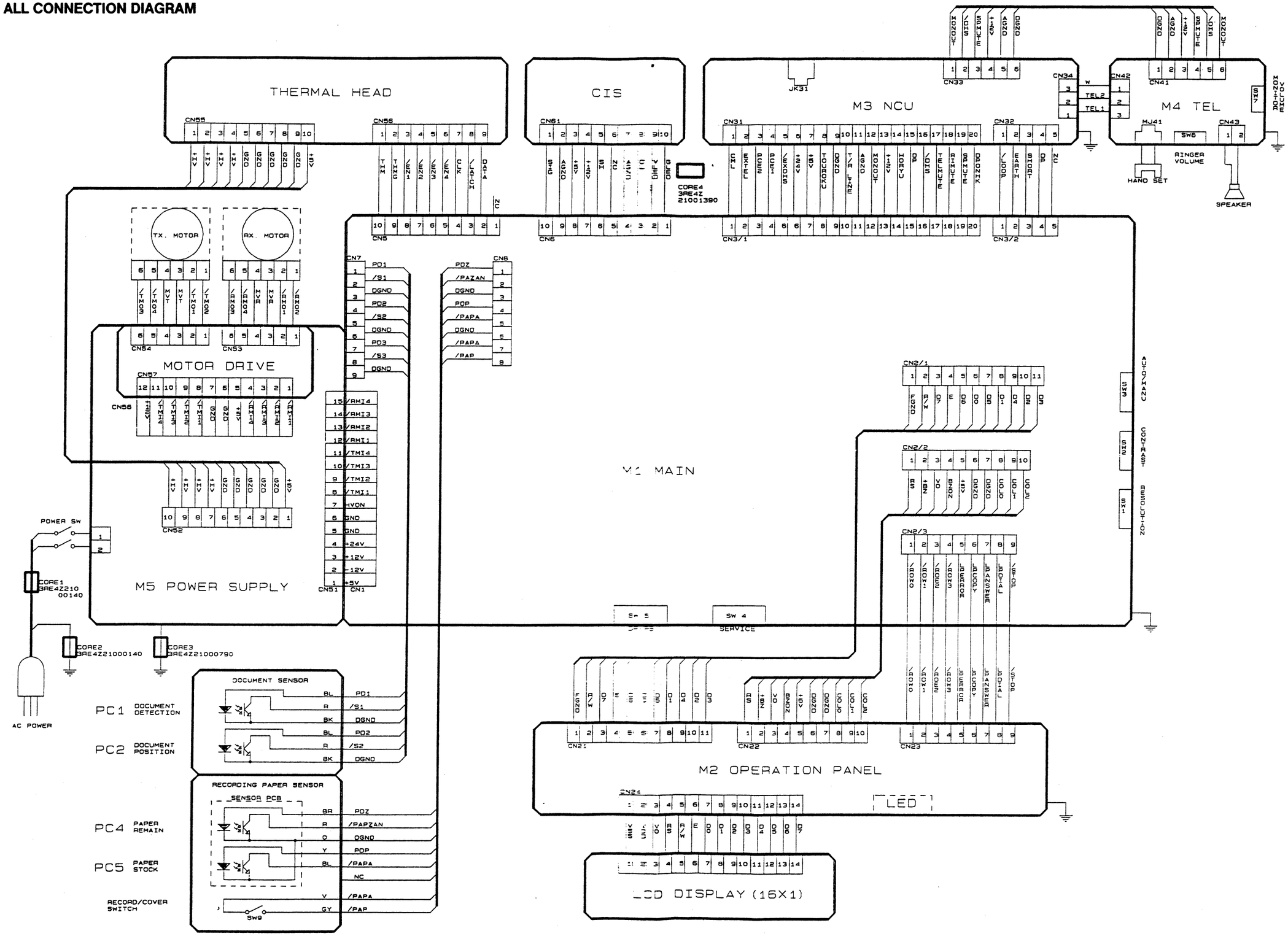
(H) Semiconductor Switch Circuit

+24V, named HV is supplied for the thermal head by on/off operation of FET controlled HVON signal from CPU.

(Q503 ~ Q505)

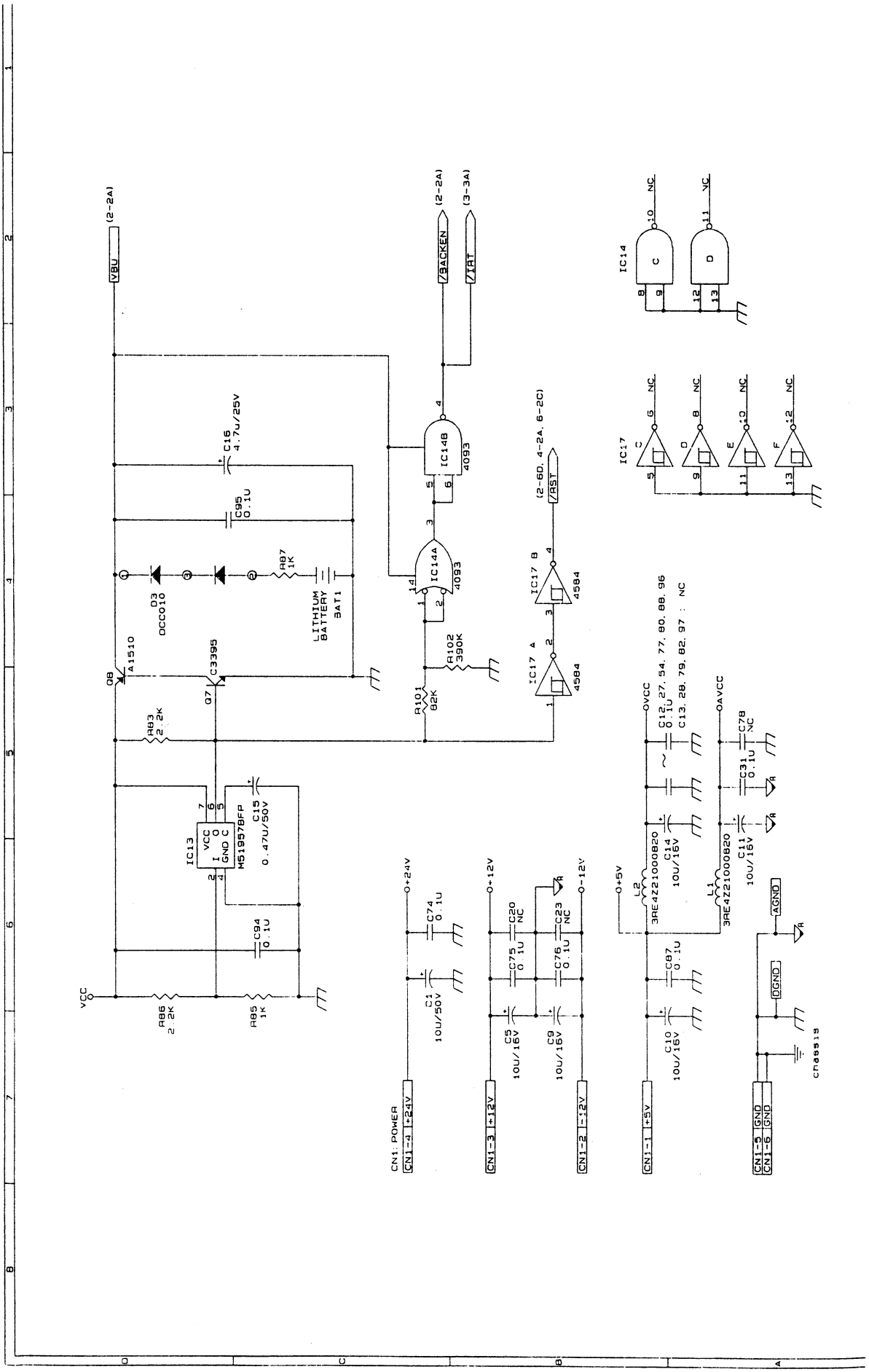


11. SCHEMATIC DIAGRAM
(1) ALL CONNECTION DIAGRAM

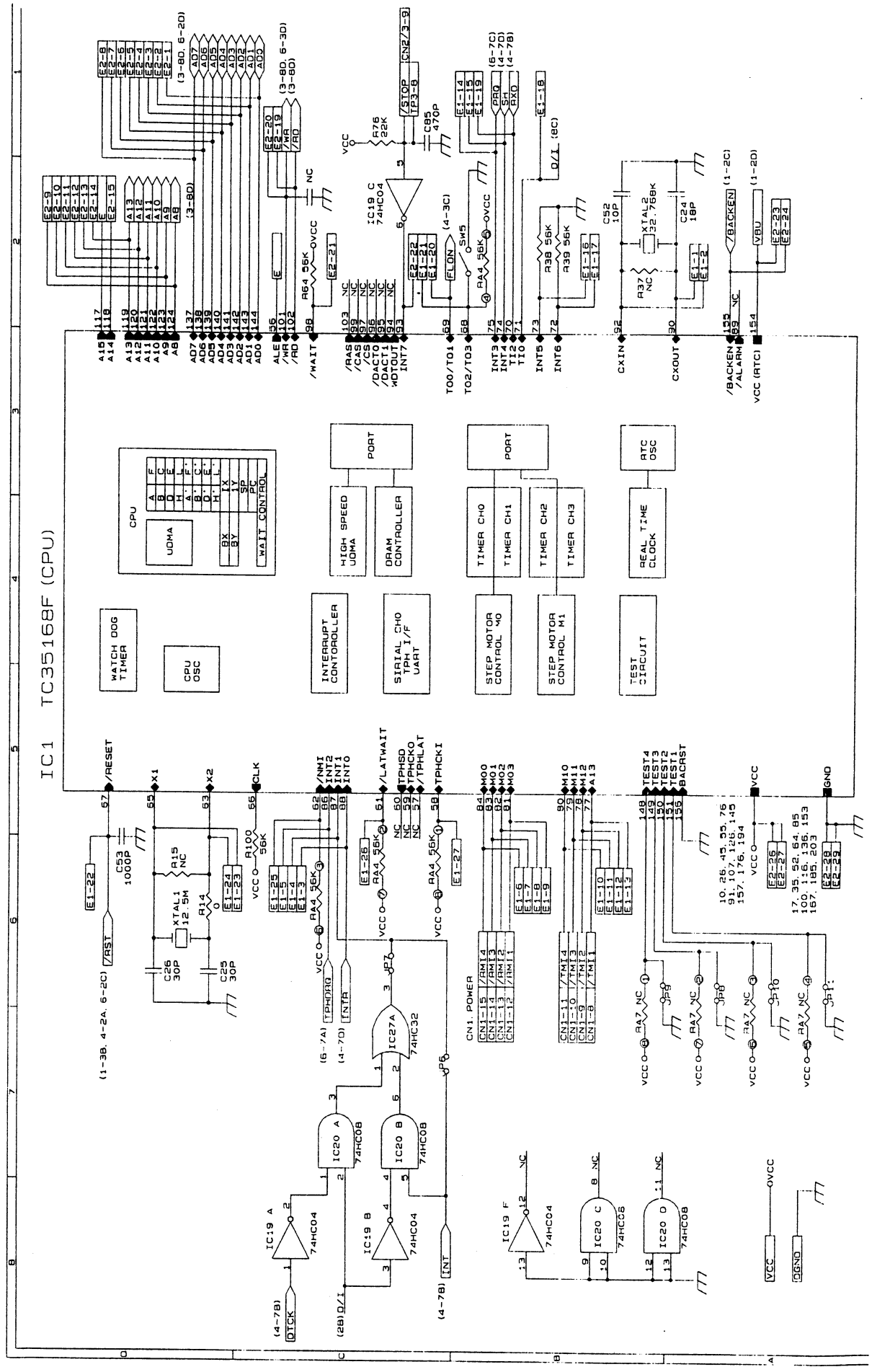


(2) SCHEMATIC DIAGRAM

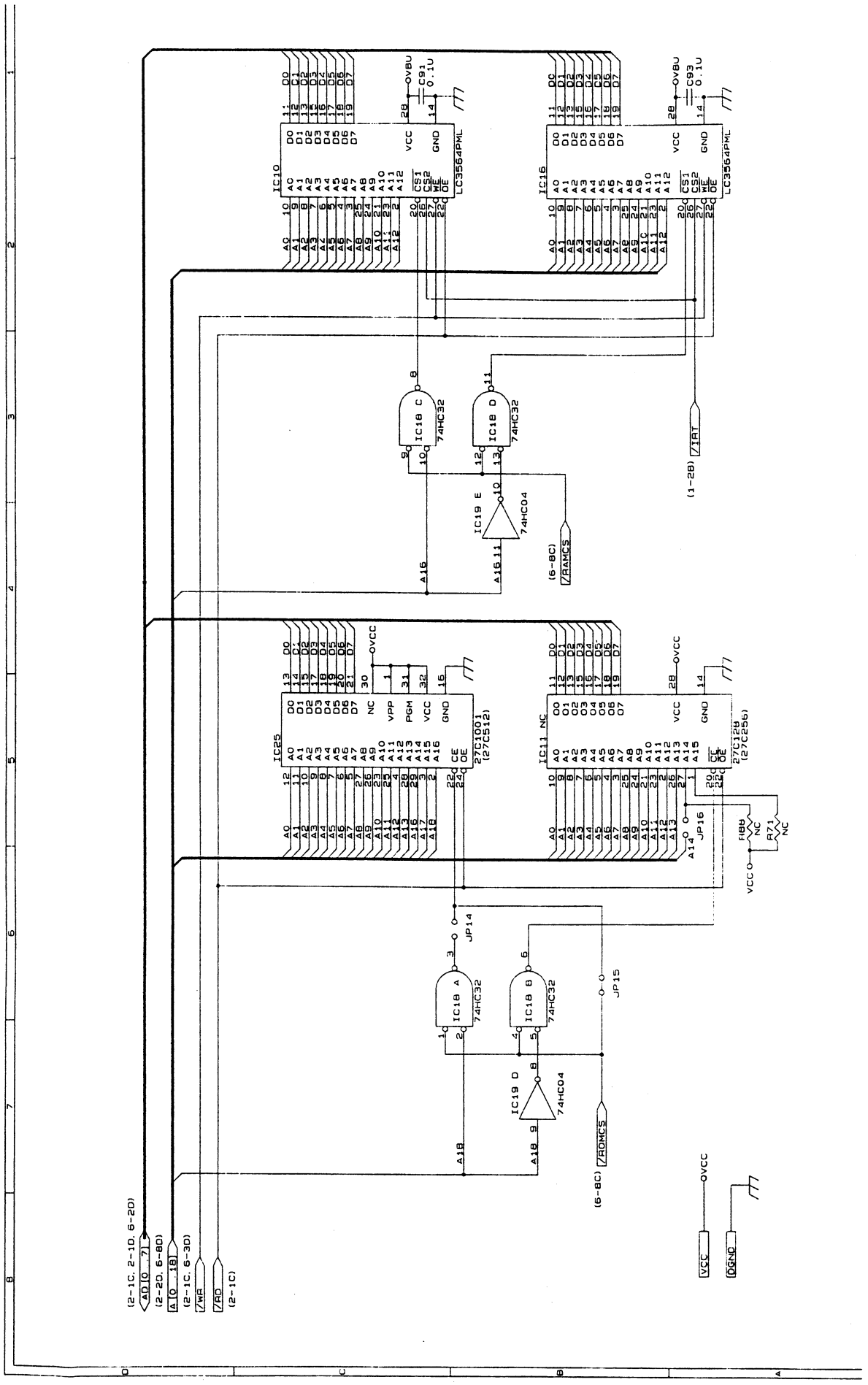
M1 (MAIN) P.W.B. (1/6)



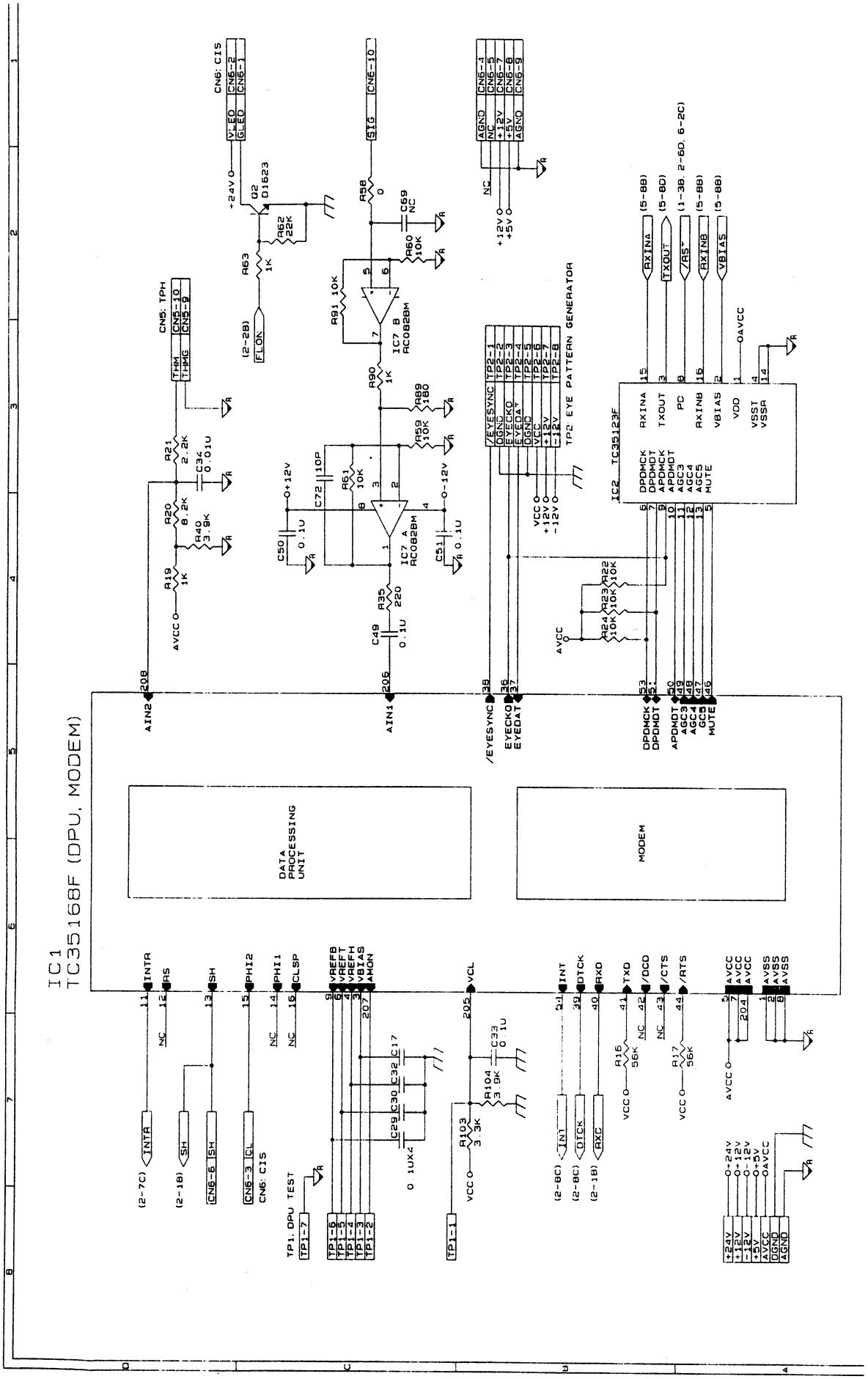
M1 (MAIN) P.W.B. (2/6)

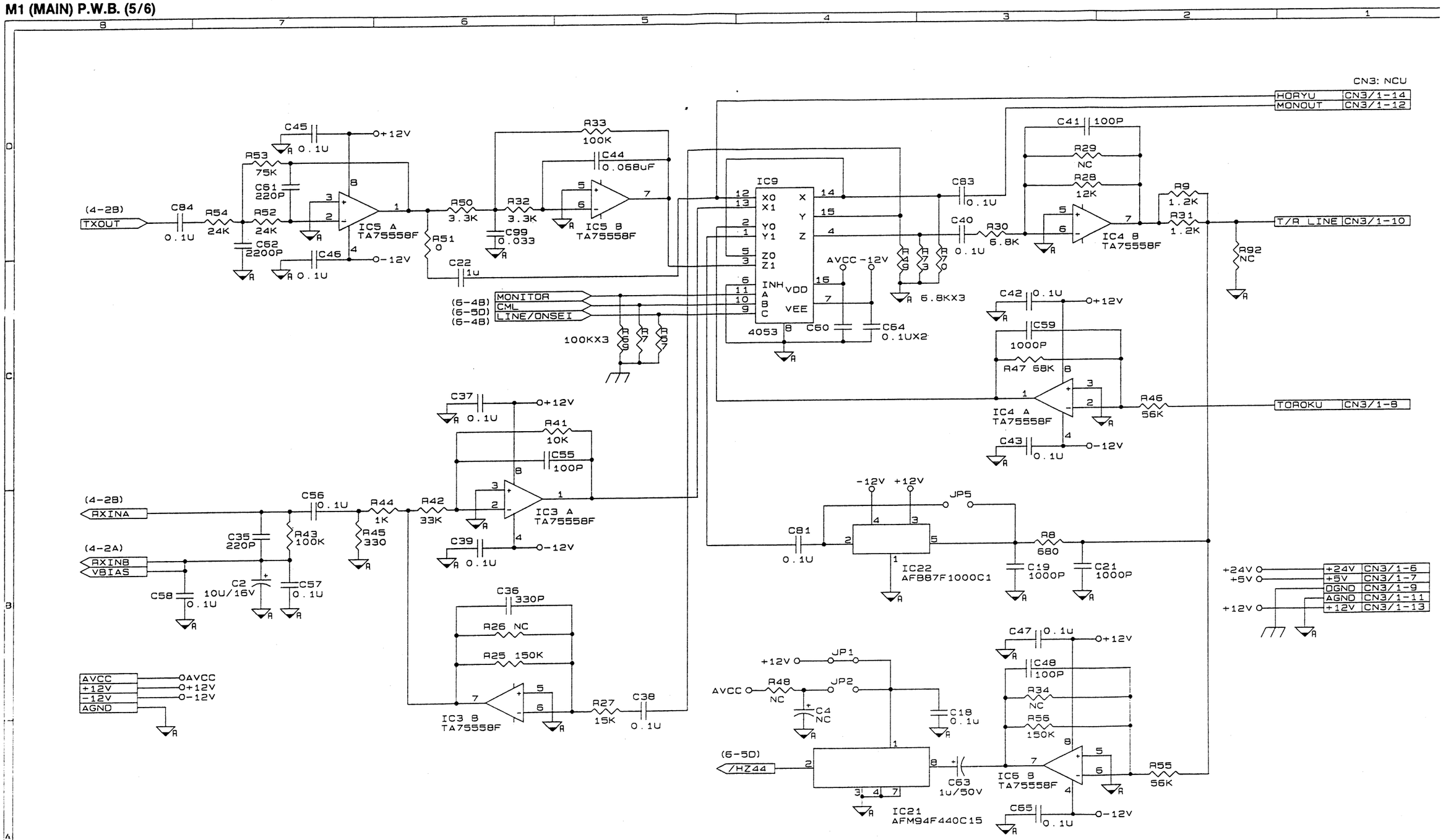


M1 (MAIN) P.W.B. (3/6)

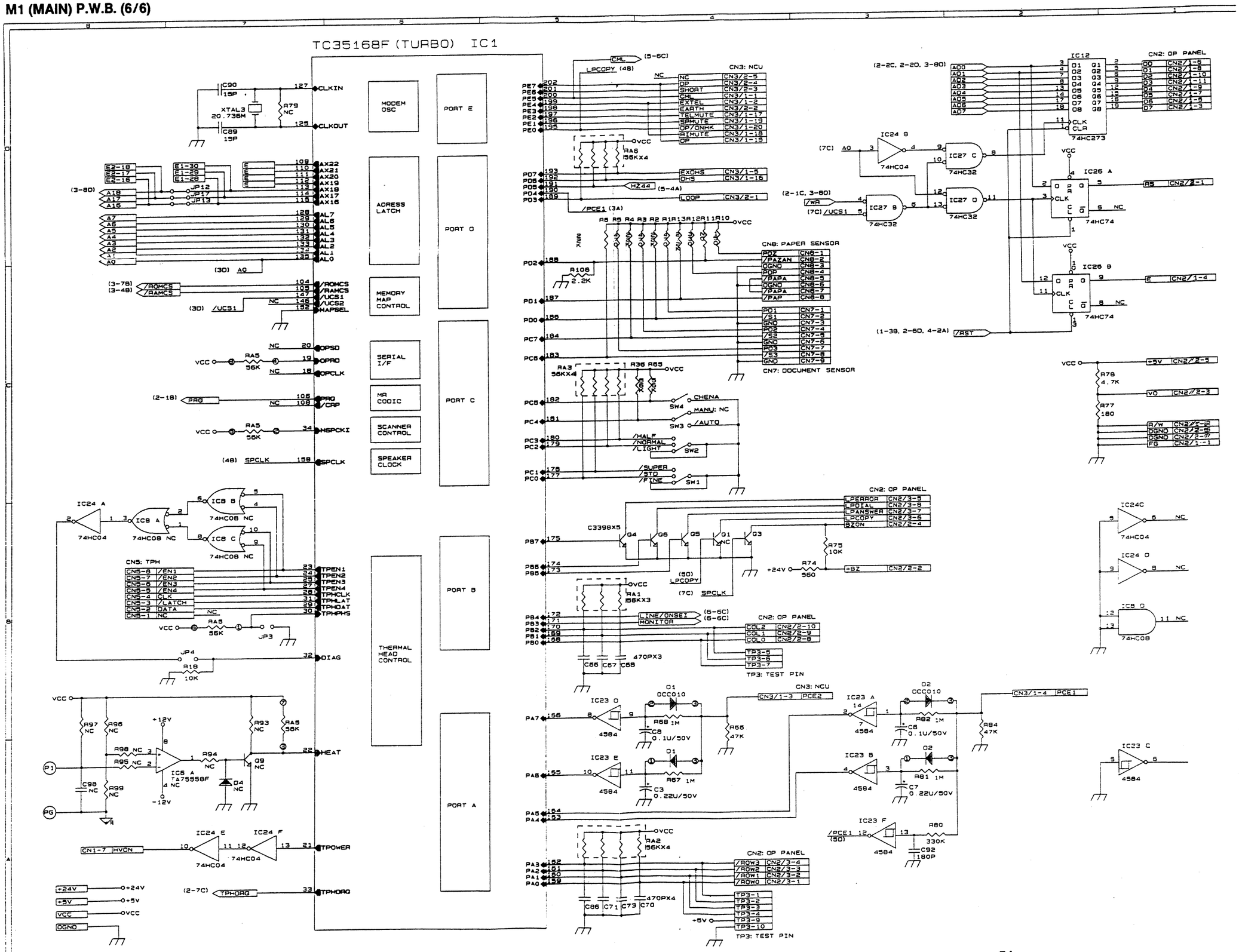


M1 (MAIN) P.W.B. (4/6)

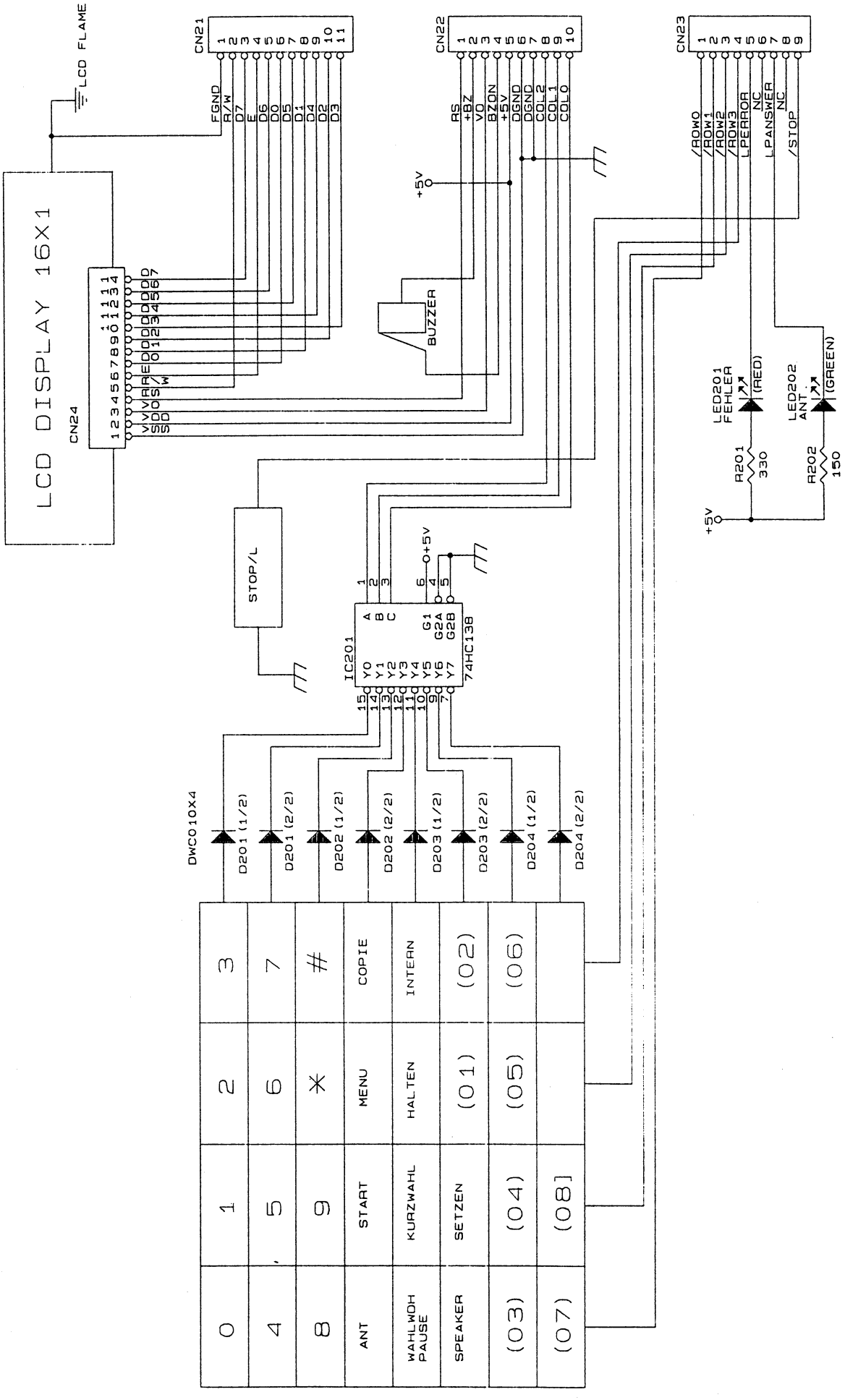



CN3: NCU
HORYU CN3/1-14
MONOUT CN3/1-12
T/R LINE CN3/1-10
TOROKU CN3/1-8
(4-2B) TXOUT
(4-2B) RXINA
(4-2A) RXINB
(4-2A) VBIAS
AVCC
+12V
-12V
AGND
(6-4B) (6-5D) MONITOR
(6-5D) CML
(6-4B) LINE/ONSEI
(6-5D) /HZ44
IC5 A TA75558F
IC5 B TA75558F
IC4 A TA75558F
IC4 B TA75558F
IC3 A TA75558F
IC3 B TA75558F
IC9 4053
IC21 AFM94F440C15
IC22 AFB87F1000C1
IC6 B TA75558F
100KX3
6.8KX3
+24V
+5V
DGND
AGND
+12V

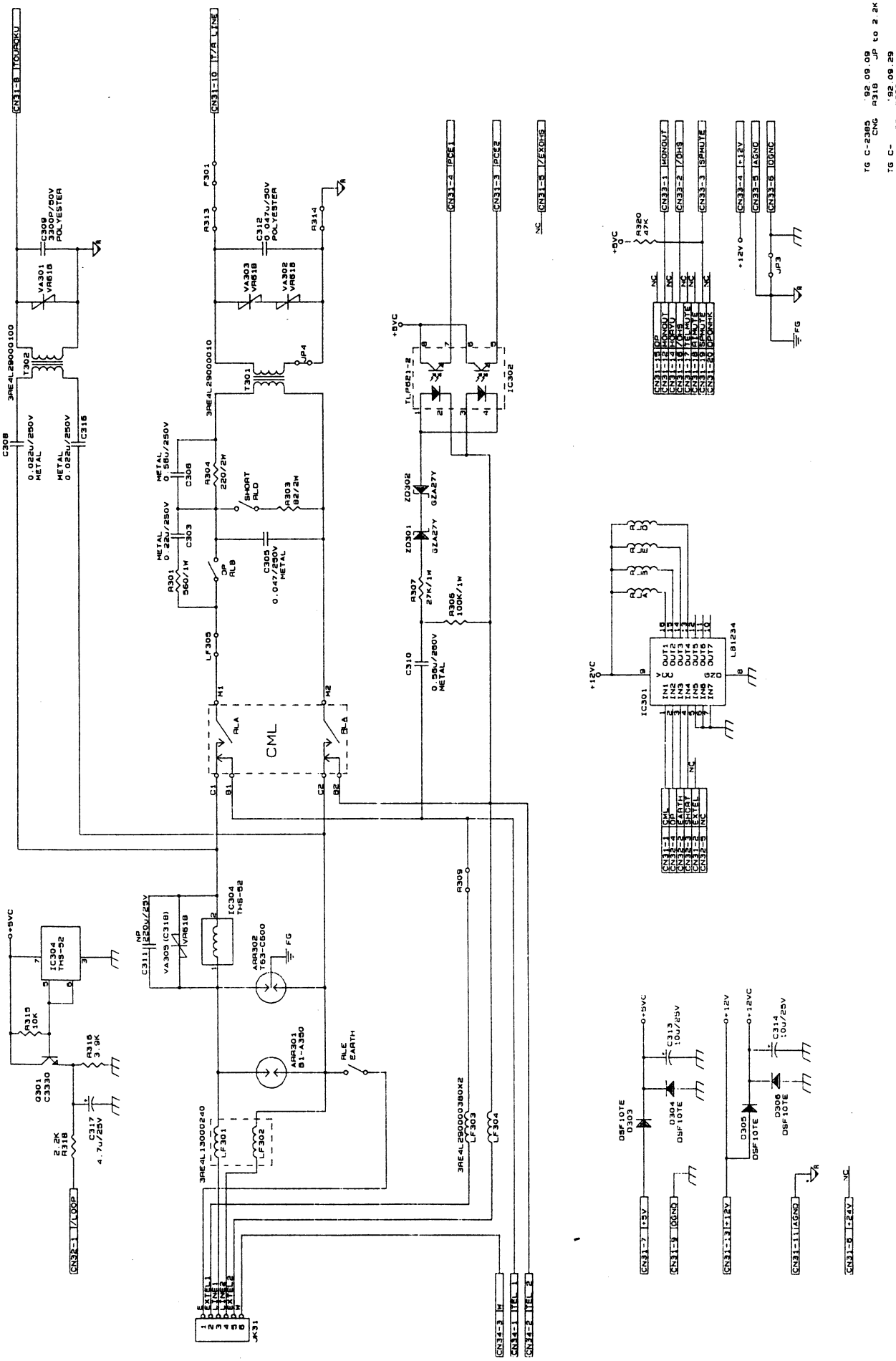
M1 (MAIN) P.W.B. (6/6)



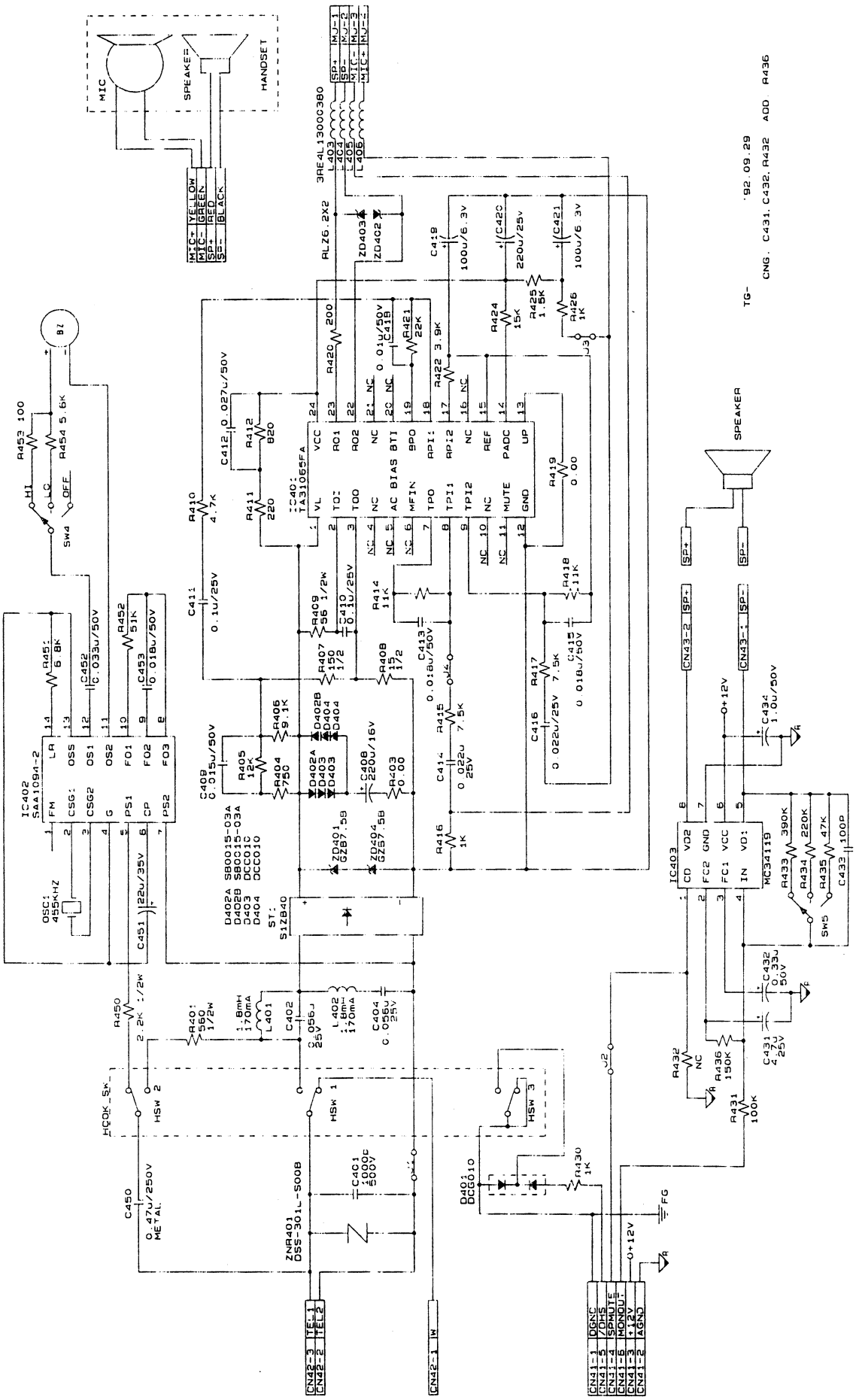
M2 (OPERATION PANEL) P.W.B.



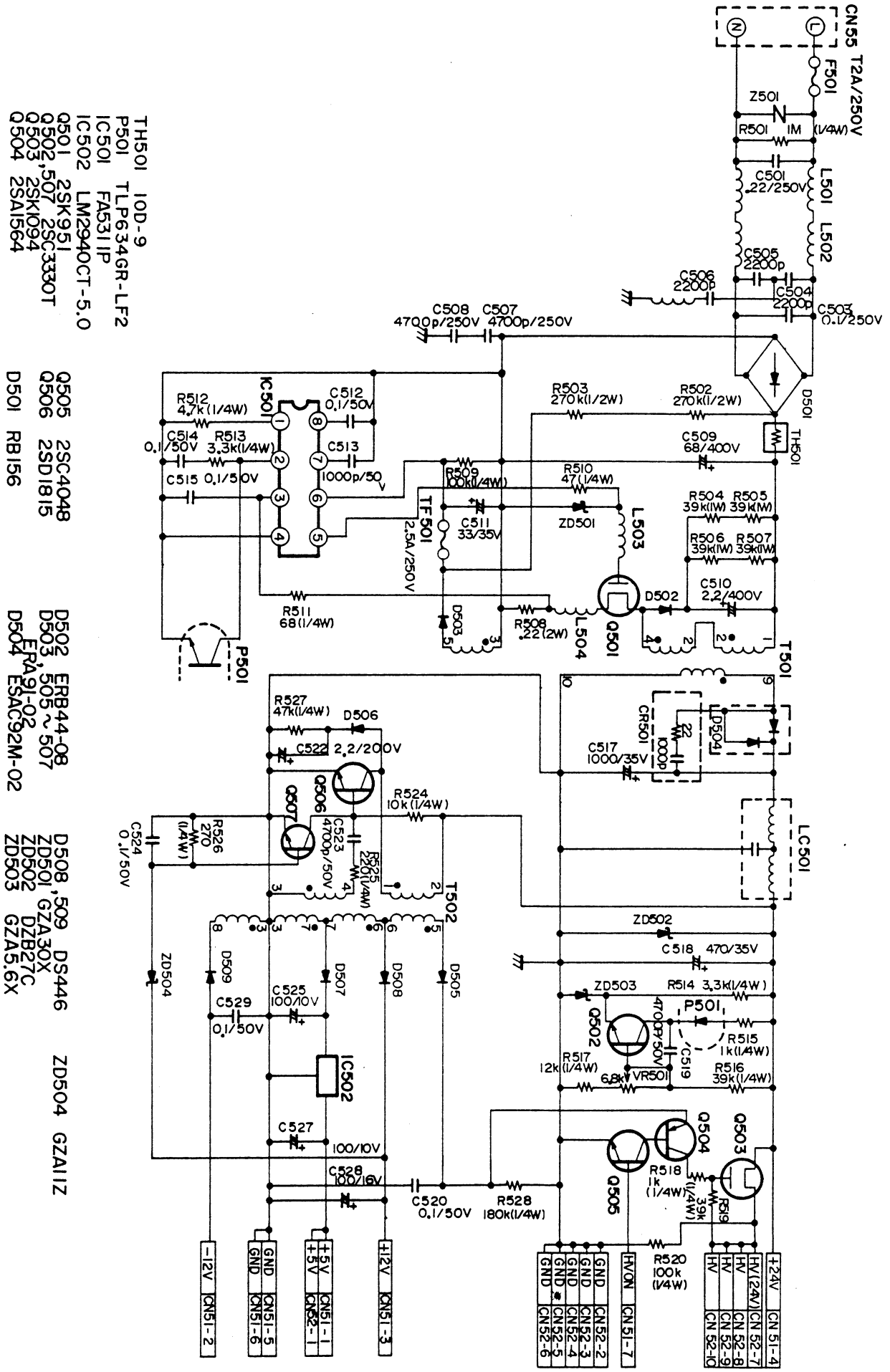
M3 (NCU) P.W.B.


CML
CN31-8 TOUROKU
CN31-10 T/A LINE
CN31-4 IPCE1
CN31-3 IPCE2
CN31-5 T/EXDIS
CN32-1 T/LOOP
CN34-3 M
CN34-1 TEL 1
CN34-2 TEL 2
JK31
IC301
LB1234
IC302
TLP521-2
IC304 THS-52
ARR302 T63-C600
ARR301 B1-A350
T301
T302
F301
JP4
JP3
RLA
RLB
RLE EARTH
SHORT RLD
VA301 VR618
VA302 VR618
VA303 VR618
VA309 (C318) VR618
ZD301 GZA27Y
ZD302 GZA27Y
3RE4L29000010
3RE4L29000100
3RE4L13000240
3RE4L29000380X2
C308 0.022U/250V METAL
C309 3300P/50V POLYESTER
C310 0.56U/250V METAL
C311 NP 220U/25V
C312 0.047U/50V POLYESTER
C313 10U/25V
C314 10U/25V
C316 0.022U/250V METAL
C317 4.7U/25V
C303 0.22U/250V METAL
C305 0.047/250V METAL
C306 0.56U/250V METAL
R301 560/1W
R303 82/2W
R304 220/2W
R307 27K/1W
R308 100K/1W
R309
R315 10K
R316 3.3K
R318 2.2K
R320 47K
D301 C3330
D303 DSF10TE
D304 DSF10TE
D305 DSF10TE
D306 DSF10TE
+5VC
+12V
+24V
CN33-1 MONOUT
CN33-2 T/DIS
CN33-3 SPMUTE
CN33-4 +12V
CN33-5 1AGND
CN33-6 0GNC
CN31-7 +5V
CN31-9 0GND
CN31-11 1AGND
CN31-13 +12V
CN31-15 +24V
TG C-2385 '92 09.09 R318 JP to 2.2K
TG C- '92 09.29 ADD. R320

M4 (TEL) P.W.B.


MIC
SPEAKER
HANDSET
MIC+ YELLOW
MIC- GREEN
SP+ RED
SP- BLACK
3RE4L13000380
L403
L404
L405
L406
SP+ MJ-1
SP- MJ-2
MIC- MJ-3
MIC+ MJ-4
RLZ6.2X2
ZD403
ZD402
C418 100U/6.3V
C420 220U/25V
C421 100U/6.3V
R425 1.5K
R426 1K
R424 15K
R421 22K
R422 3.9K
C419 0.01U/50V
R420 200
R410 4.7K
C412 0.027U/50V
R412 820
R411 220
C411 0.1U/25V
IC402 TA31065FA
IC402 SAA1091-2
R419 0.00
R418 11K
C415 0.018U/50V
C416 0.022U/25V
R417 7.5K
R414 11K
C413 0.018U/50V
R415 7.5K
C414 0.022U 25V
R416 1K
R409 56 1/2W
C410 0.10/25V
R407 150 1/2W
R408 1/2
R406 9.1K
R405 12K
R404 750
R403 0.00
C408 0.015U/50V
C409 220U/16V
D402A SB00015-03A
D402B SB00015-03A
D403 DCC010
D404 DCC010
D402B D404 D404
D402A D403 D403
ZD401 GZB7.5B
ZD404 GZB7.5B
ST: S1ZB40
C451 220U/35V
OSC: 455KHZ
R453 100
R454 5.6K
R455 6.8K
R452 51K
C452 0.033U/50V
C453 0.018U/50V
SW4 HI LO OFF
B1
R450 2.2K 1/2W
R440 150 1/2W
L401 1.8mH 170mA
L402 1.8mH 170mA
C402 0.056U 25V
C404 0.056U 25V
C450 0.47U/250V METAL
C401 1000P 500V
ZNR401 DSS-301L-500B
HOOK SW
HSW 1
HSW 2
HSW 3
D401 DCG010
R430 1K
FG
CN42-3 TEL1
CN42-2 TEL2
CN42-1 W
CN41-1 DGND
CN41-2 +12V
CN41-3 MONOUT
CN41-4 SPMUTE
CN41-5 SPHS
CN41-6 AGND
IC403 MC34119
R433 390K
R434 220K
R435 47K
C433 100P
SW5
C434 1.0U/50V
C431 4.7U 25V
C432 0.33U 50V
R436 150K
R431 100K
R432 NC
CN43-2 SP+
CN43-1 SP-
SPEAKER
SP+
SP-
0+12V
TG-
'92.09.29
CNG: C431, C432, R432 ADD R436

M5 (POWER SUPPLY) P.W.B. (1/2)



TH501 10D-9
P501 TLP634GR-LF2
IC501 FA5311P
IC502 LM2940CT-5.0
Q501 2SK951
Q502,507 2SK1094 2SC3330T
Q503 2SK1094
Q504 2SA1564

Q505 2SC4048
Q506 2SD1815

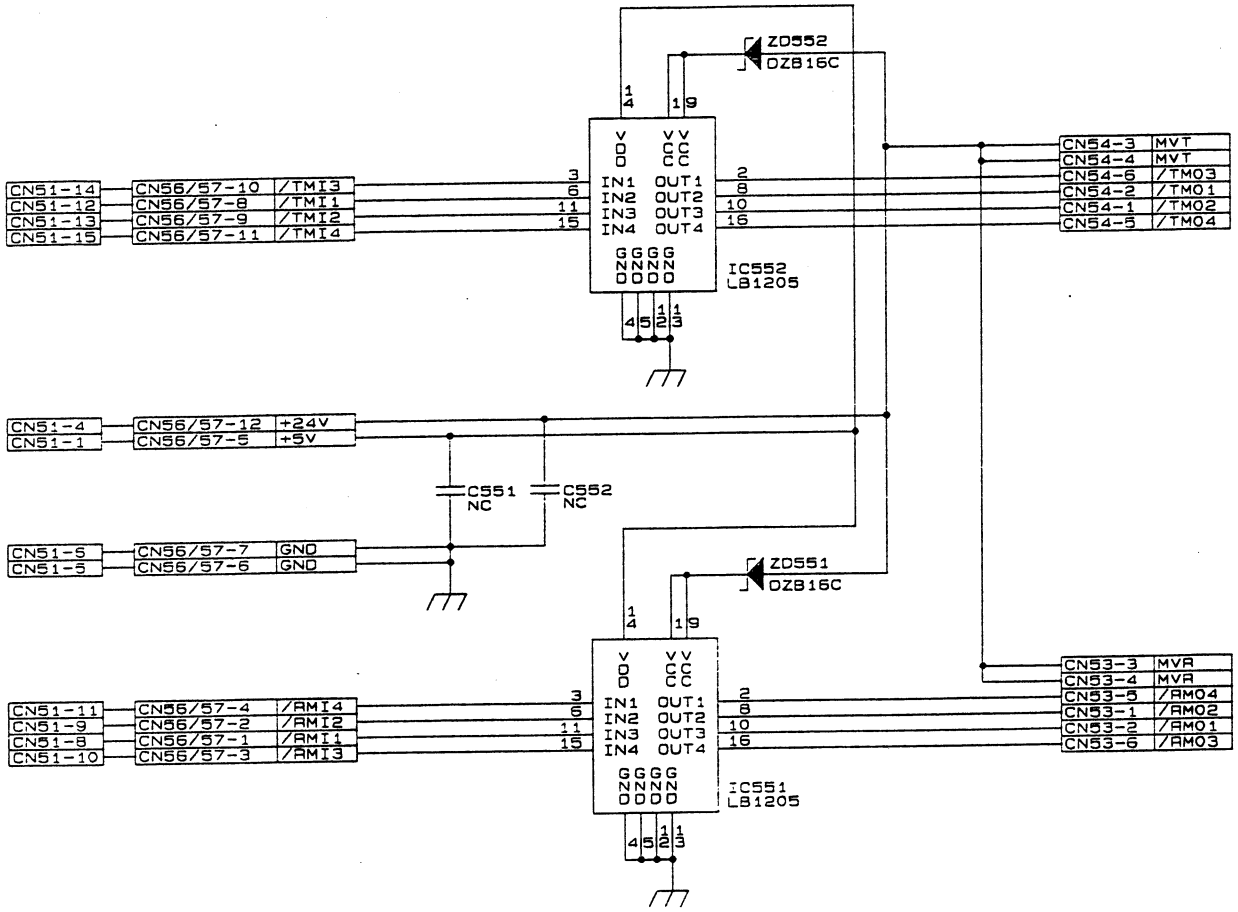
D501 RB156

D502 ERB44-08
D503,505~507 ERA91-02
D504 ESAC92M-02

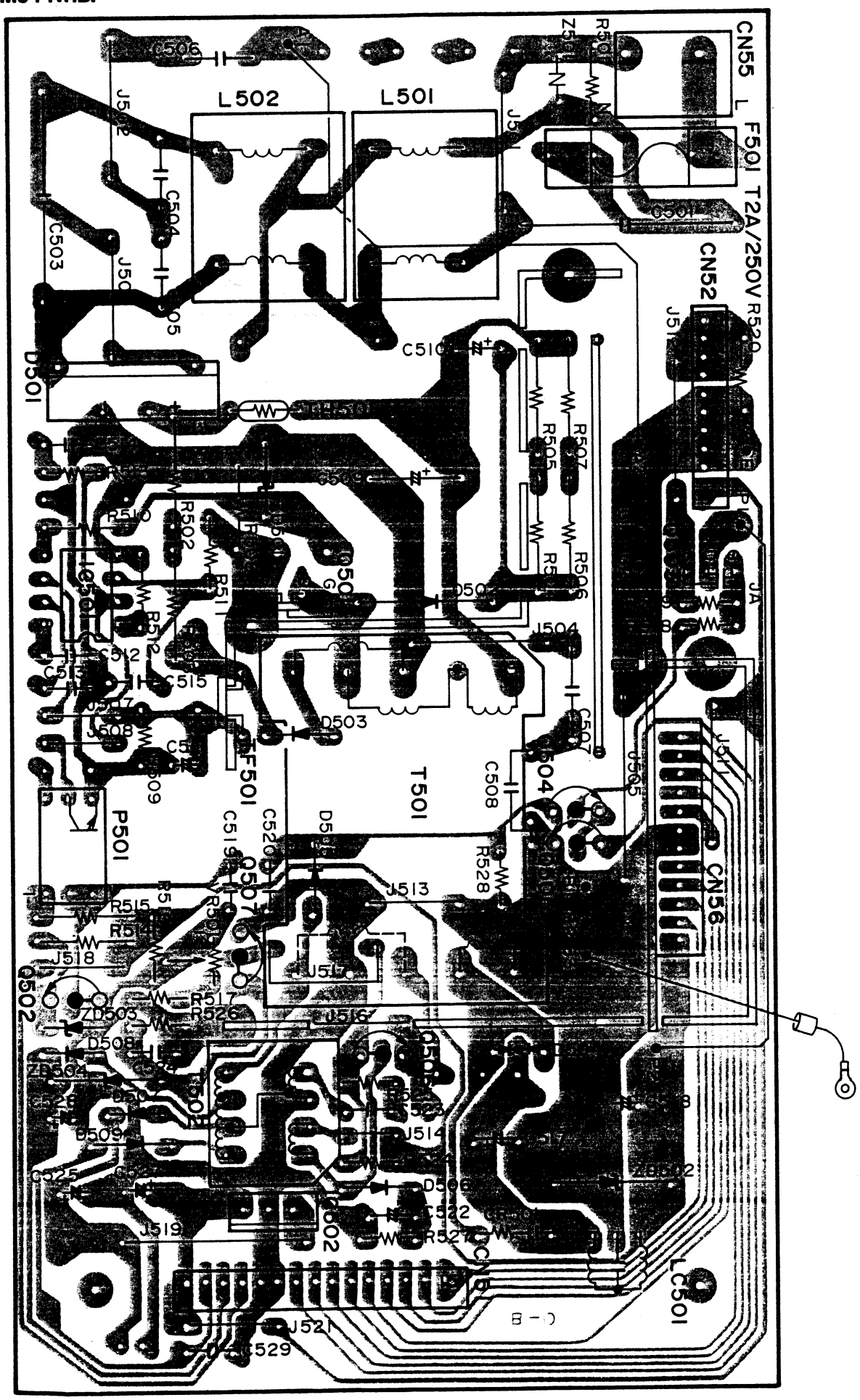
D508,509 DS446
ZD501 GZA30X
ZD502 DZB27C
ZD503 GZA5.6X

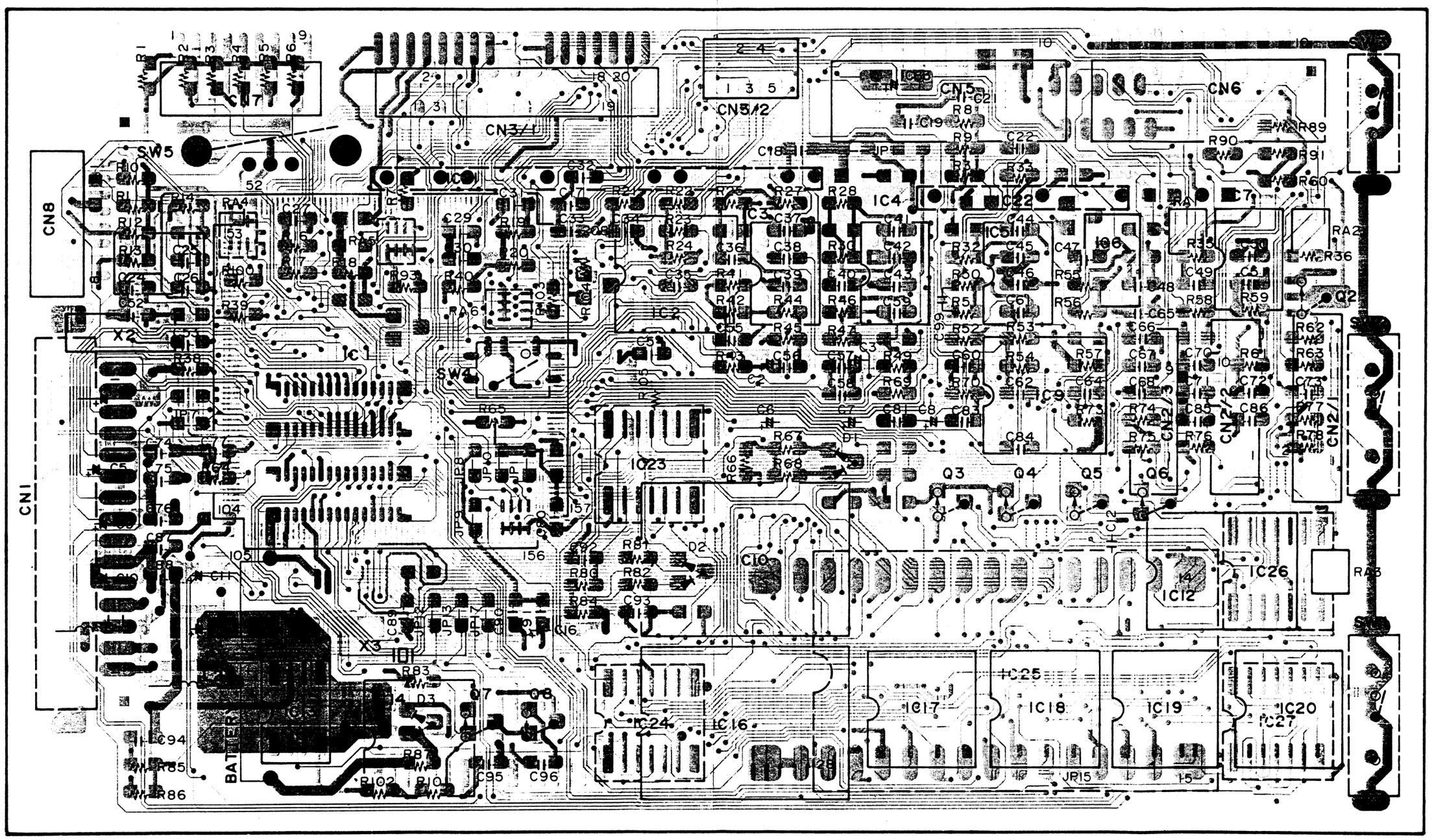
ZD504 GZA11Z

M5 (POWER SUPPLY) P.W.B. (2/2)



(3) PW BOARD DIAGRAM
M5 P.W.B.




CN1
CN2/1
CN2/2
CN2/3
CN3/1
CN5/1
CN5/2
CN6
CN8
SW5
SW4
X2
X3
IC1
IC2
IC4
IC5
IC9
IC10
IC12
IC16
IC17
IC18
IC19
IC20
IC23
IC24
IC25
IC26
IC27
Q2
Q3
Q4
Q5
Q6
Q7
Q8
D2
D3
BATTERY
JP1
JP2
JP3
JP4
JP5
JP6
JP7
JP8
JR15

(4) Signal name and Function

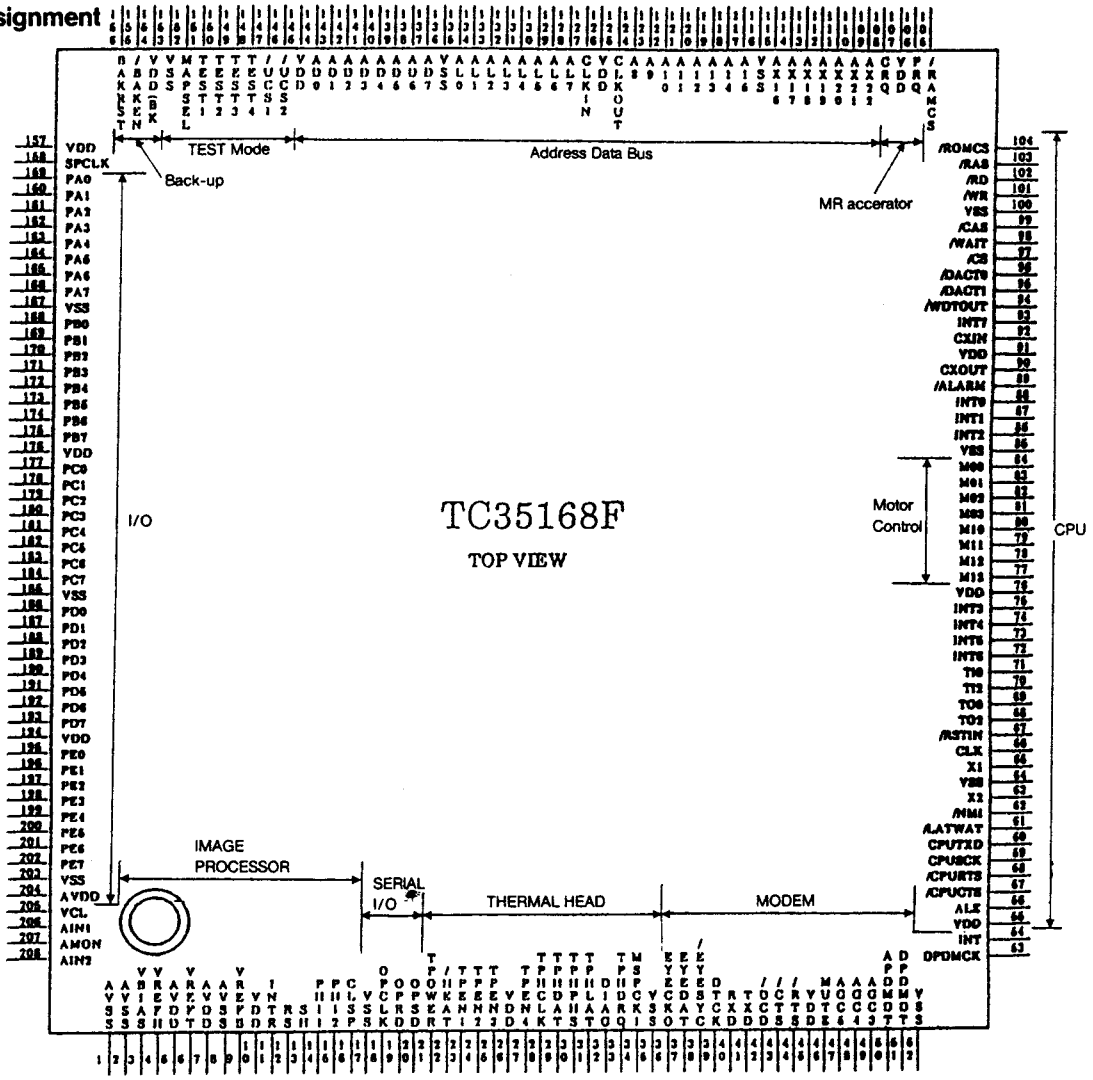
SIGNAL NAME	FUNCTION	CONNECTOR	NOTES
HVON	Thermal head power ON	CN1 ~ CN51	ON: High
TM01 ~ TM04	Transmission motor pulse	CN1 ~ CN51	
RM01 ~ RM04	Reception motor pulse	CN1 ~ CN51	
R/W	LCD data read/write	CN2 ~ CN21	
E	LCD data enable	CN2 ~ CN21	
D0 ~ D7	LCD data bus	CN2 ~ CN21	
RS	LCD internal register selector	CN2 ~ CN22	
BZON	Buzzer signal	CN2 ~ CN22	
COL0 ~ COL2	Key scan column	CN2 ~ CN22	Key ON: Low
$\overline{ROW0}$ ~ $\overline{ROW3}$	Key scan row	CN2 ~ CN23	Key ON: Low
LPERROR	Error LED	CN2 ~ CN23	LED ON: Low
LPCOPY	Copy LED	CN2 ~ CN23	LED ON: Low
LPANSWER	Answer mode LED	CN2 ~ CN23	LED ON: Low
LPDIAL	Start LED	CN2 ~ CN23	LED ON: Low
$\overline{STOP}$	Stop switch	CN2 ~ CN23	Key ON: Low
CML	Connect modem to line signal	CN3 ~ CN31	
EXTEL	External Tel. switchover	CN3 ~ CN31	
PCE1, PCE2	Ringing signal detection	CN3 ~ CN31	
EXDHS	External Tel. hook up detection	CN3 ~ CN31	
TOUROKU	Remote Rec. DTMF or CNG signal detection	CN3 ~ CN31	
T/RLINE	Transmission, Reception signal	CN3 ~ CN31	
MONOUT	Line Monitor	CN3 ~ CN31	
HORYU	Melody on hold signal	CN3 ~ CN31	
DP	Dial pulse signal	CN3 ~ CN31	Break: High
$\overline{DHS}$	Internal handset hook up detection	CN3 ~ CN31	Hook up: Low
TELMUTE	Telephone mute	CN3 ~ CN31	Mute: High
RIMUTE	Ringing signal mute	CN3 ~ CN31	Mute: High
SPMUTE	Monitor mute	CN3 ~ CN31	Mute: High
DPONHK	ON-Hook signal	CN3 ~ CN31	ON-Hook: Low
$\overline{LOOP}$	Loop current detection	CN3 ~ CN32	LOOP: Low
EARTH	Circuit earth signal	CN3 ~ CN32	
SHORT	Circuit short signal	CN3 ~ CN32	
THM	Thermistor output	CN5 ~ CN56	
THMG	Thermistor ground	CN5 ~ CN56	
$\overline{EN1}$ ~ $\overline{EN4}$	Thermal head strobe signal	CN5 ~ CN56	
CLK	Thermal head serial clock	CN5 ~ CN56	
$\overline{LATCH}$	Thermal head latch input	CN5 ~ CN56	Latch: Low
DATA	Thermal head serial data	CN5 ~ CN56	
SIG	Image signal (CIS output signal)	CN6 ~ CN61	
SH	Scan signal for sensor drive	CN6 ~ CN61	
CL	Clock for sensor drive	CN6 ~ CN61	
VLED	LED drive voltage for CIS	CN6 ~ CN61	ON: +24V
PD1 ~ PD2	Photo Diodes for S1 and S2	CN7	
$\overline{S1}$	Document stock detection	CN7	No document: High
$\overline{S2}$	Document read position detection	CN7	No document: High
PDP	Photo Diode for PDP	CN8	
$\overline{PAP}$	Recording paper stock detection	CN8	No paper: High
SP+	Speaker signal	CN41	
SP-	Speaker ground	CN41	

12. PARTS SPECIFICATIONS

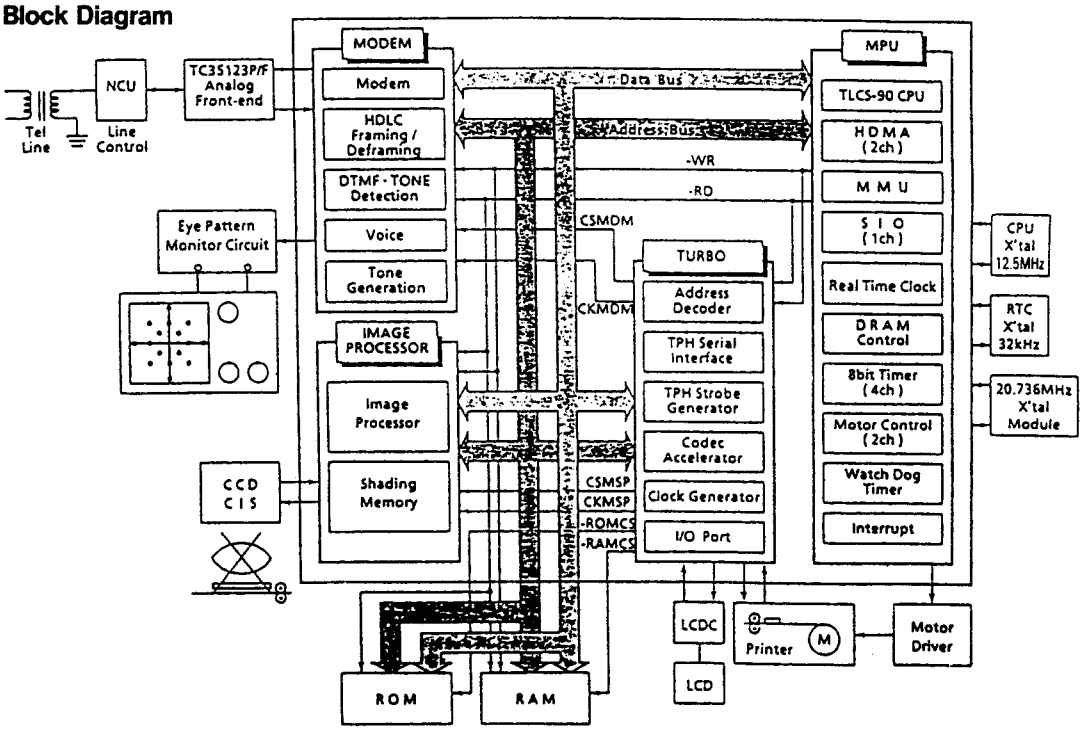
(1) IC configuration

TC35168F

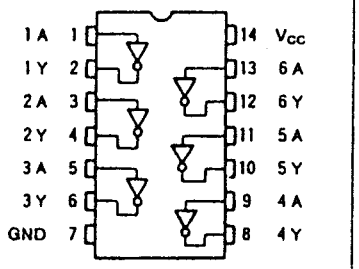
Pin Assignment



System Block Diagram

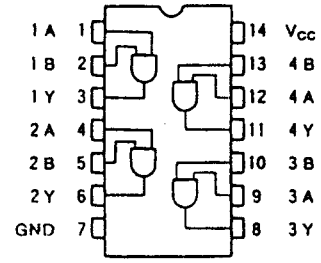


74HC04



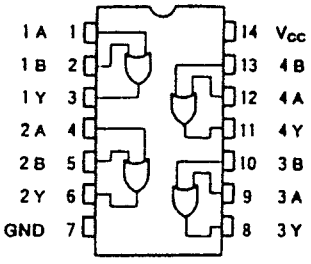
(TOP VIEW)

74HC08



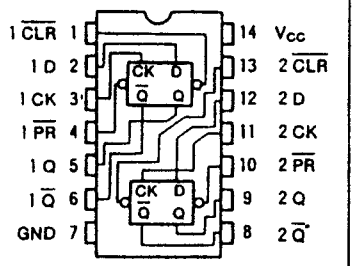
(TOP VIEW)

74HC32



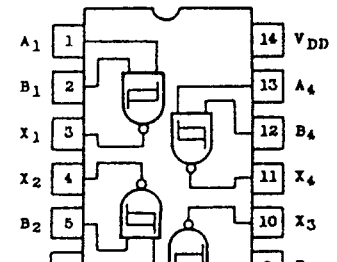
(TOP VIEW)

74HC74



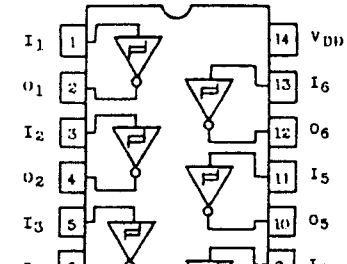
(TOP VIEW)

TC4093



TOP VIEW

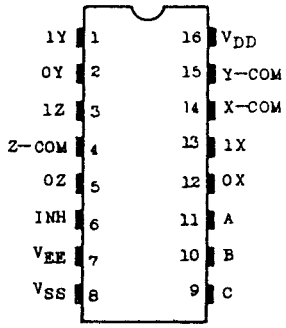
TC4584

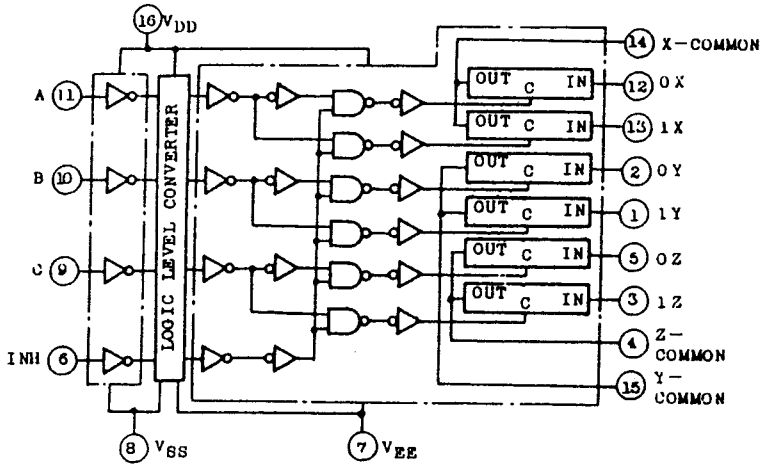


TOP VIEW

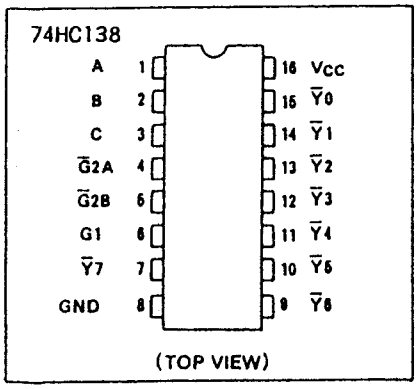
TC4053BP/BF

TC4053





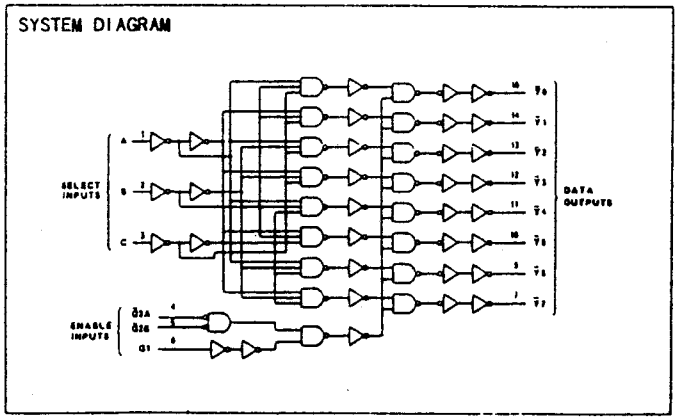
74HC138



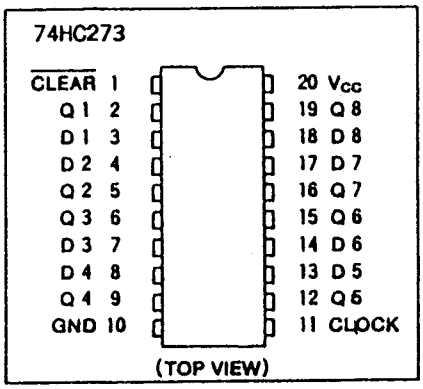
(TOP VIEW)

74HC138

SYSTEM DIAGRAM

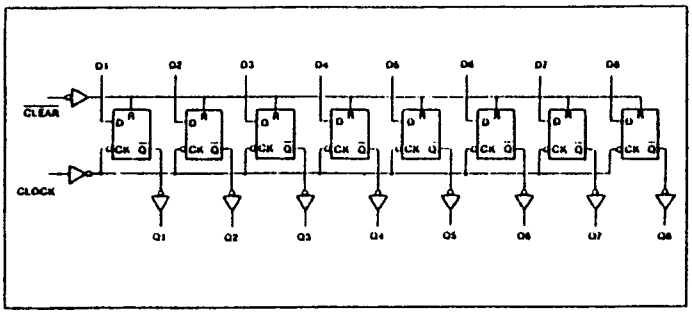


74HC273

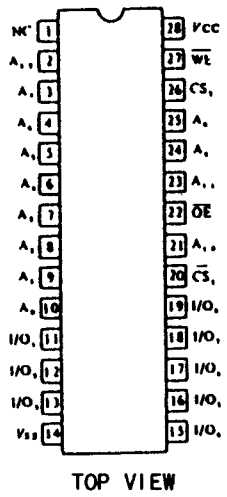


74HC273

SYSTEM DIAGRAM

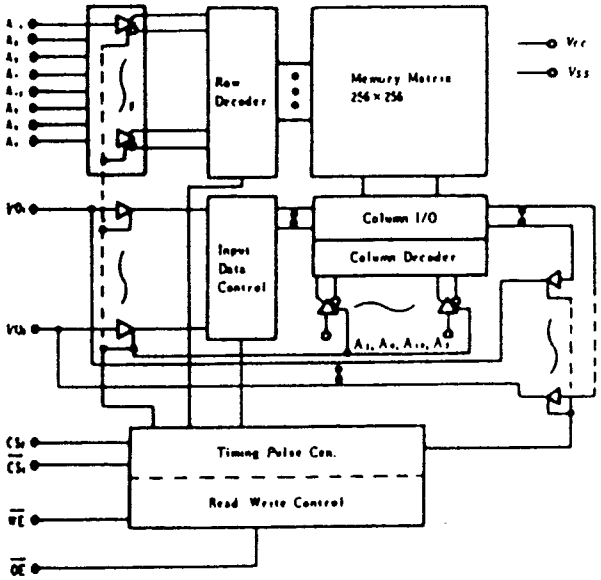


LC3564

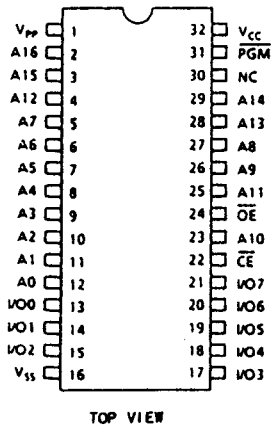


LC3564

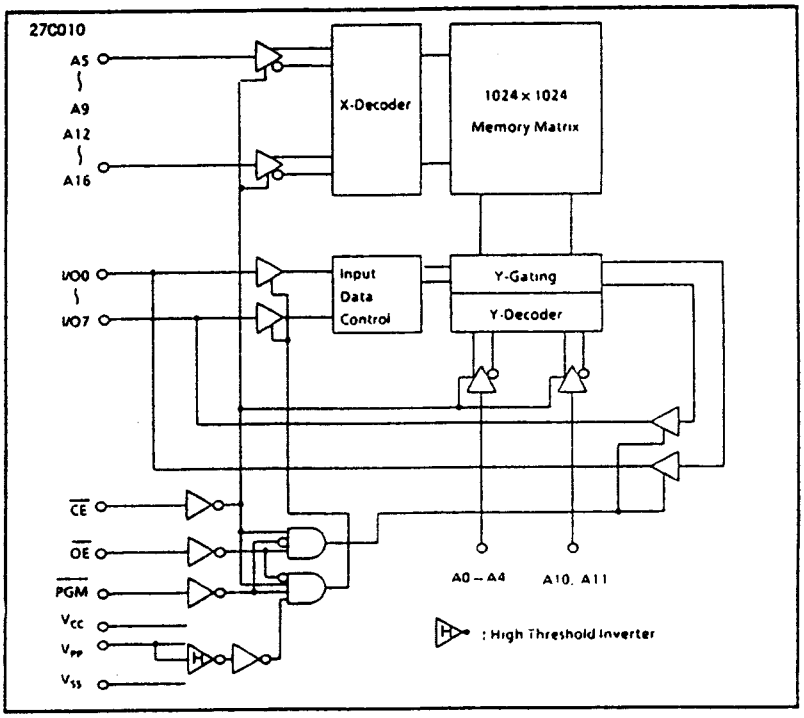
BLOCK DIAGRAM



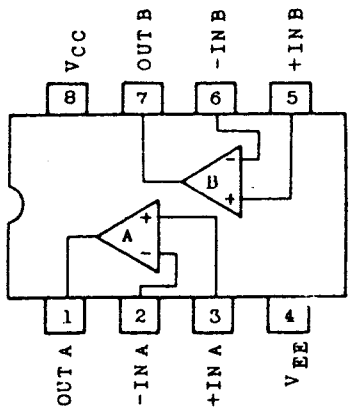
27C010



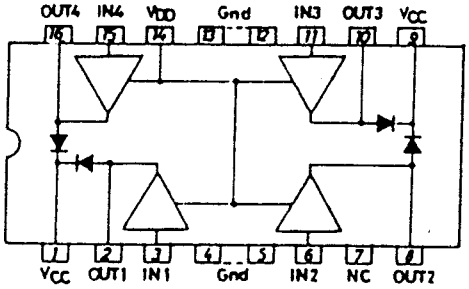
27C010



TA75558
LA6462
RC082BM

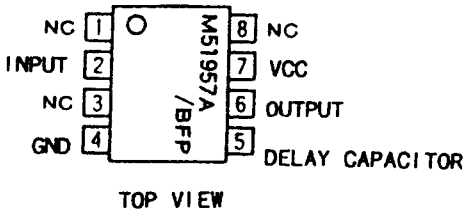


LB1205



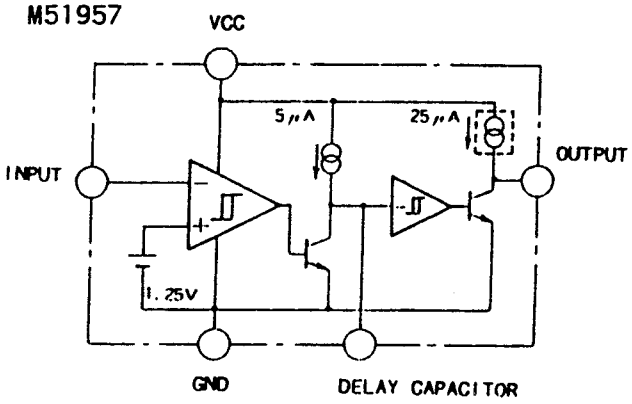
Remark: Vcc line of pin No. 1 and No. 9 are shorted internally.

M51957



TOP VIEW

M51957



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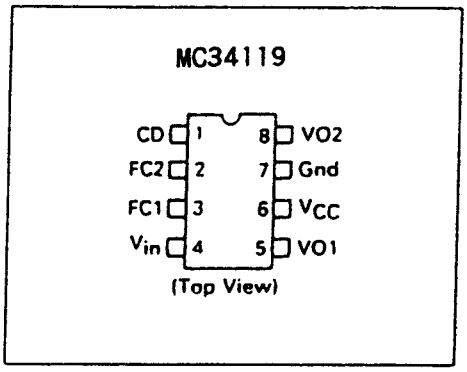

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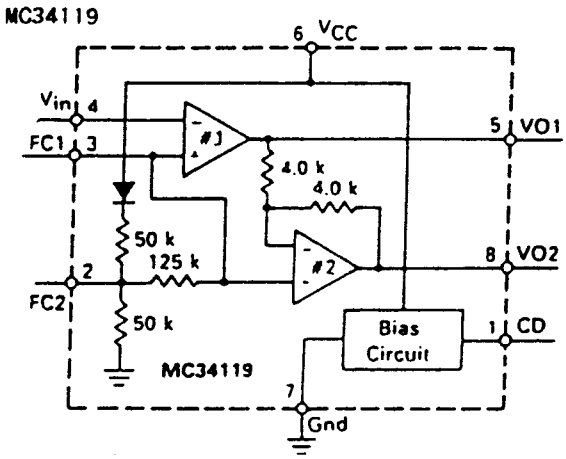
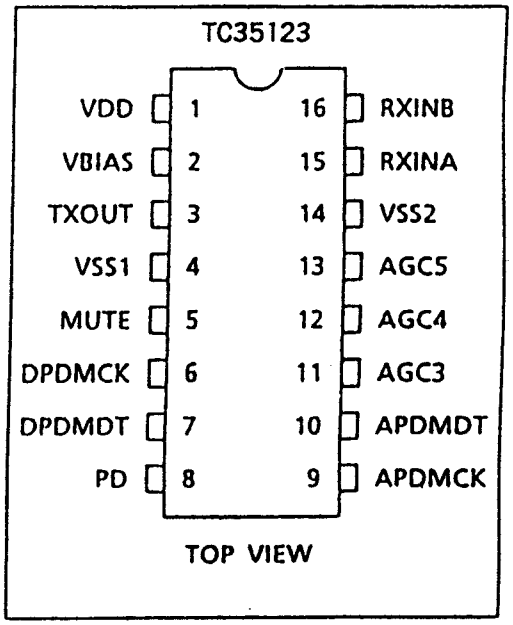
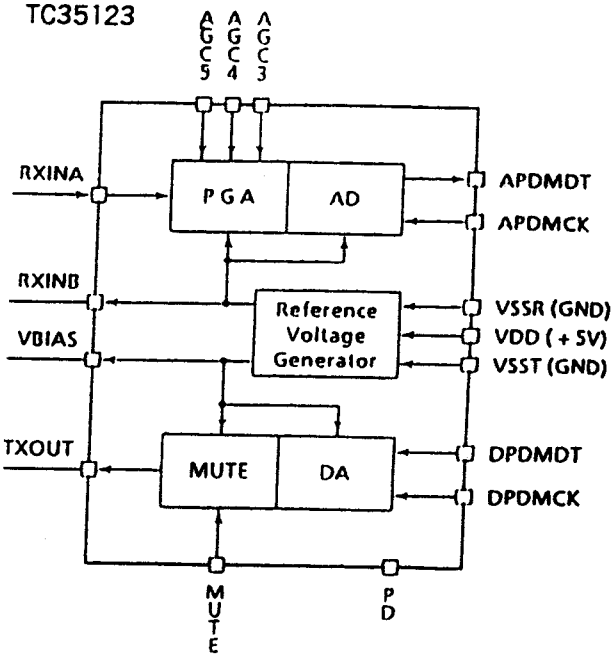


TC35123



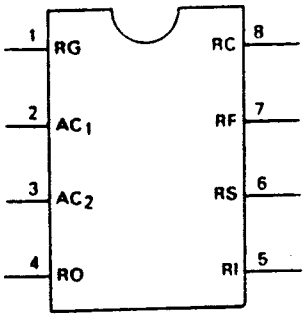
TOP VIEW

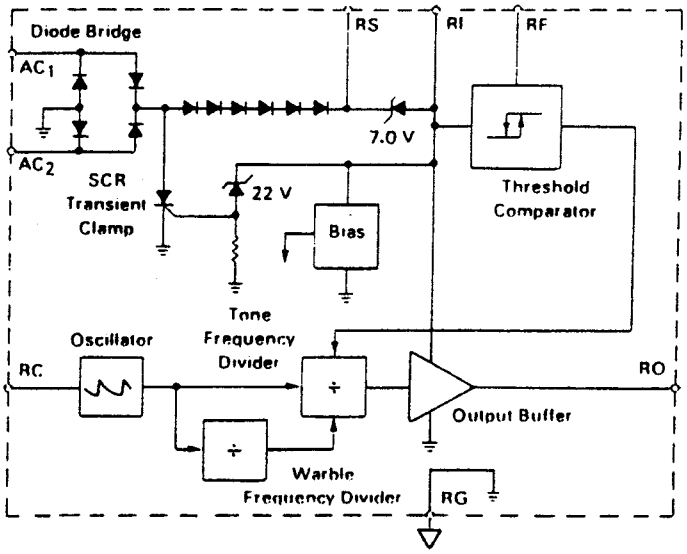
TC35123



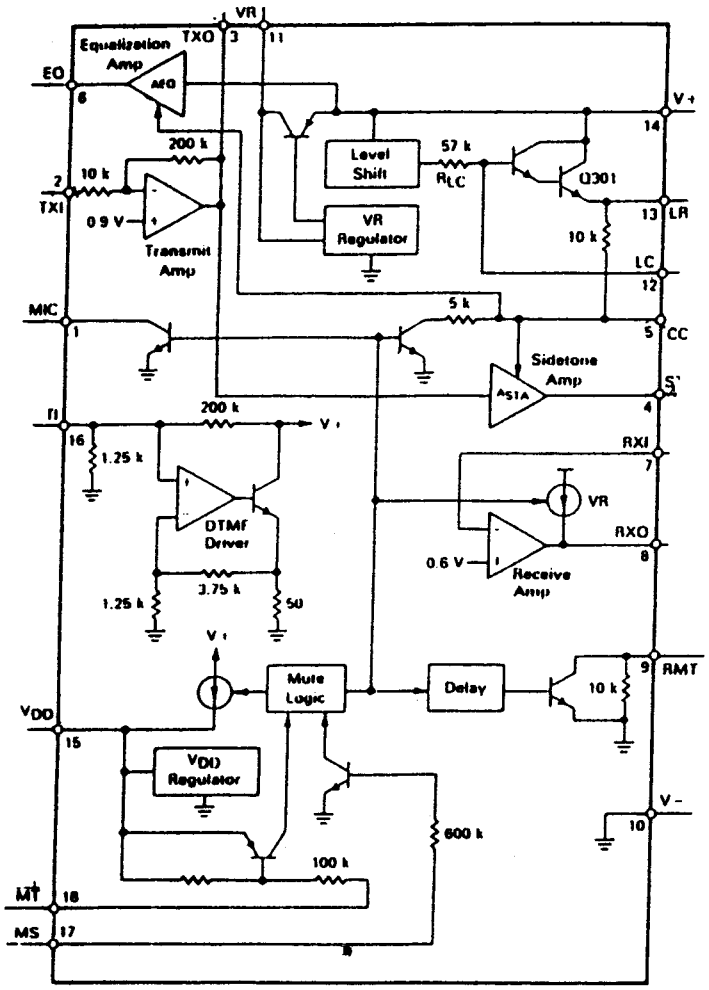
MC34012

APPLICATION CIRCUIT





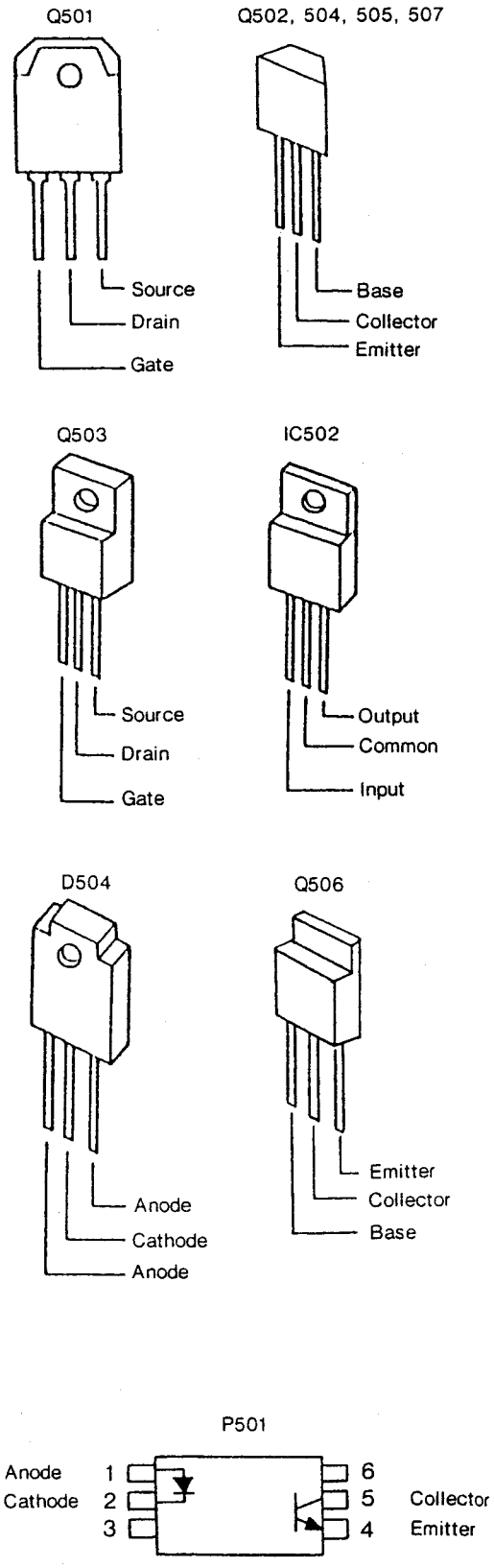
MC34014



(2) Parts specification for power supply

Ref.No.	Kinds	Names	Ratings
Transistor			
Q501	Power MOS FET	2SK951	VDSS : 800V
			ID : 2.5A
Q502,507		2SC3330T	Vceo : 50V
			Ic : 0.2A
Q503	Power MOS FET	2SK1094	VDSS : 60V
			ID : 15A
Q504		2SA1564	Vceo : 50V
			Ic : 0.1A
Q505		2SC4048	Vceo : 50V
			Ic : 0.1A
Q506		2SD1815	Vceo : 100V
			Ic : 3A
Diode			
D501	Rectifier Stack	RB-156	Vrm : 600V
			Io : 1.5A
D502	High speed	ERB44-08	Vrm : 800V
			Io : 1A
D504	Low loss	ESAC92M-02	Vrm : 200V
			Io : 10A
D503,505, 506,507		ERA91-02	Vrm : 200V
			Io : 0.5A
D508,509	High speed	DS446	Vrm : 105V
			Io : 0.2A
Zener diode			
ZD501		GZA30X	Vz : 30V
			Pc : 0.5W
ZD502		DZB27C	Vz : 27V
			Pc : 1W
ZD503		GZA5.6X	Vz : 5.6V
			Pc : 0.5W
ZD504		GZA11Z	Vz : 11V
			Pc : 0.5W
IC			
IC501	IC	FA5311	
IC502	Voltage Regulator	LM2940CT −5.0	Vout : 5V
			Iout : 1A
Photo Coupler			
P501		TLP634	Isolation Voltage : 4kV

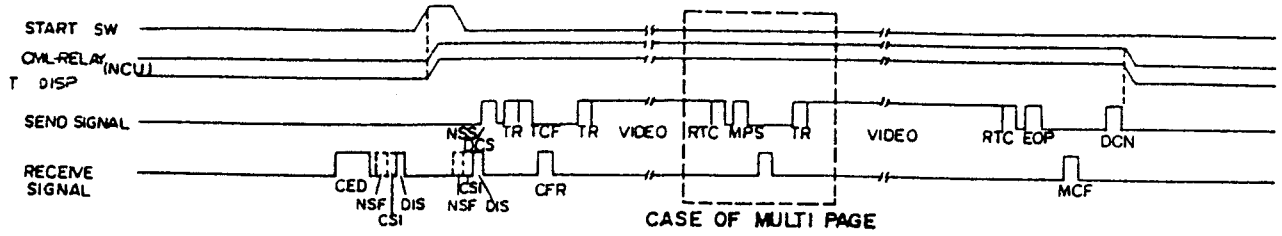
(3) Figure of main parts for power supply



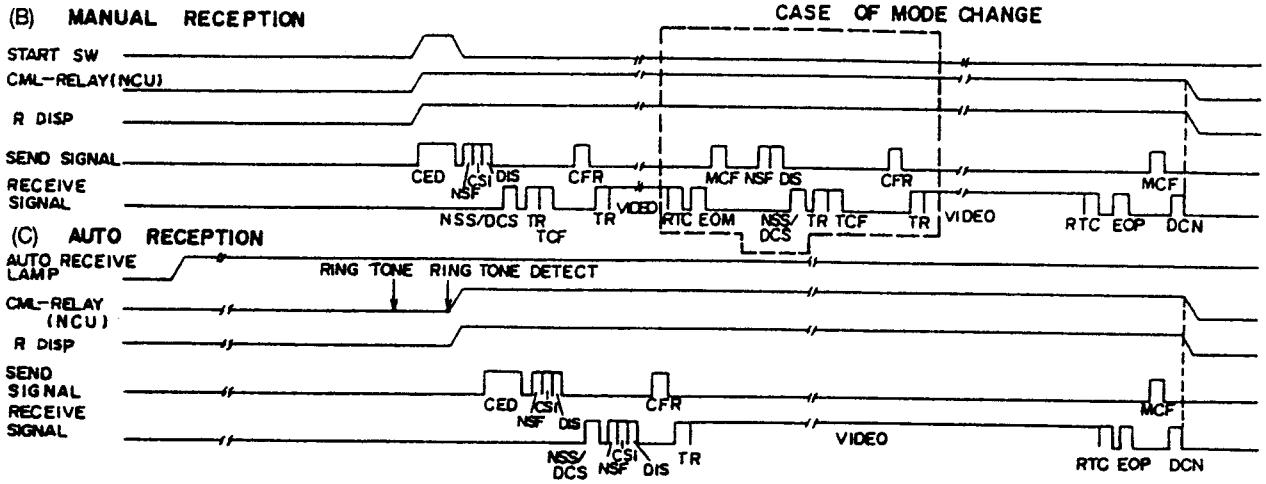
13. TIME CHARTS OF EACH COMMUNICATION MODE

(1) HIGH SPEED MODE

(A) MANUAL TRANSMISSION



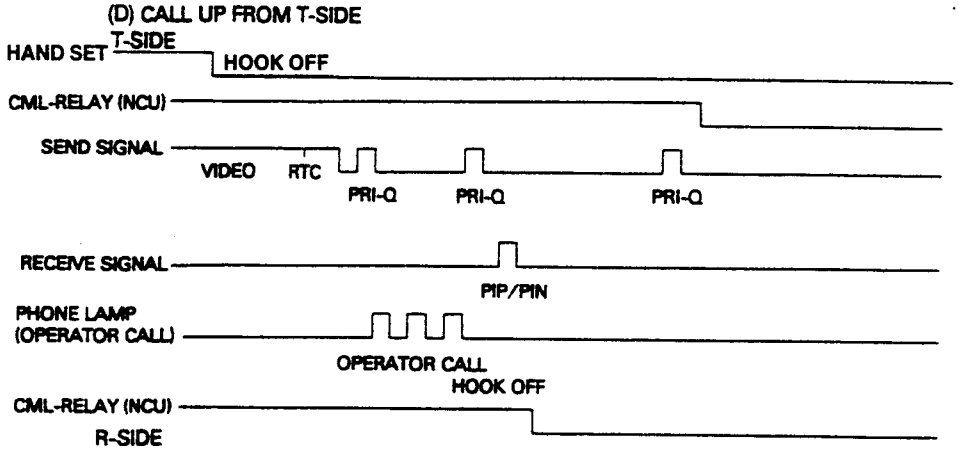
(B) MANUAL RECEPTION



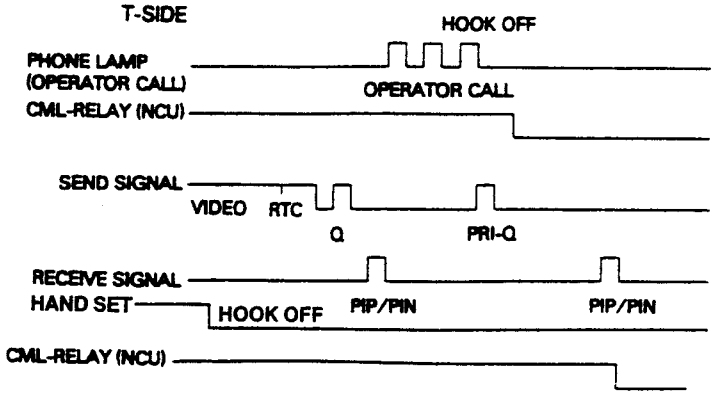
(C) AUTO RECEPTION

(2) TEL RESERVATION (OTHERS 2) (CALL UP AFTER SENDING)

(D) CALL UP FROM T-SIDE

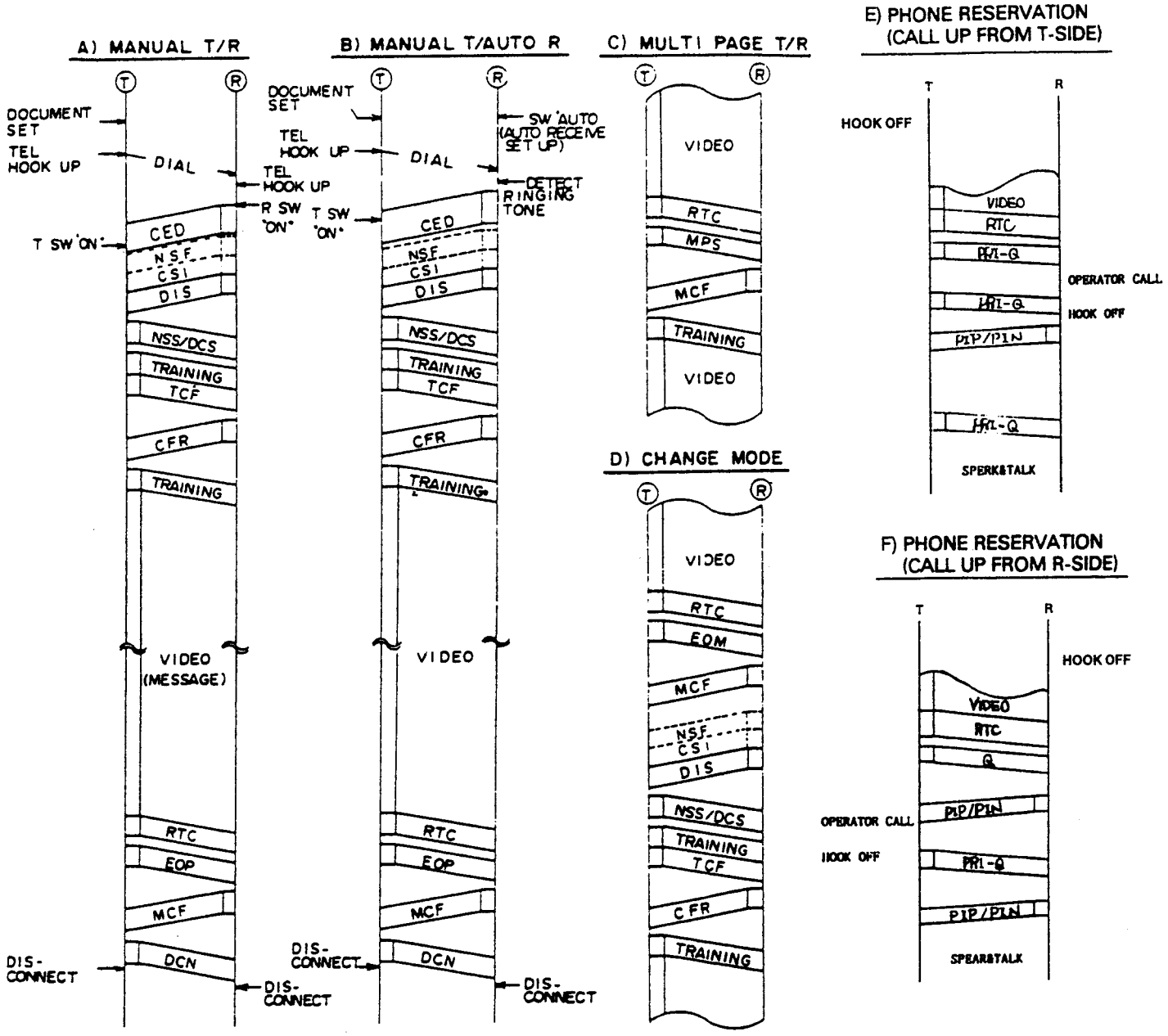


(E) CALL UP FROM R-SIDE



14. SIGNAL FLOW CHART

(1) HIGH SPEED MODE



15. EXPLODED VIEW

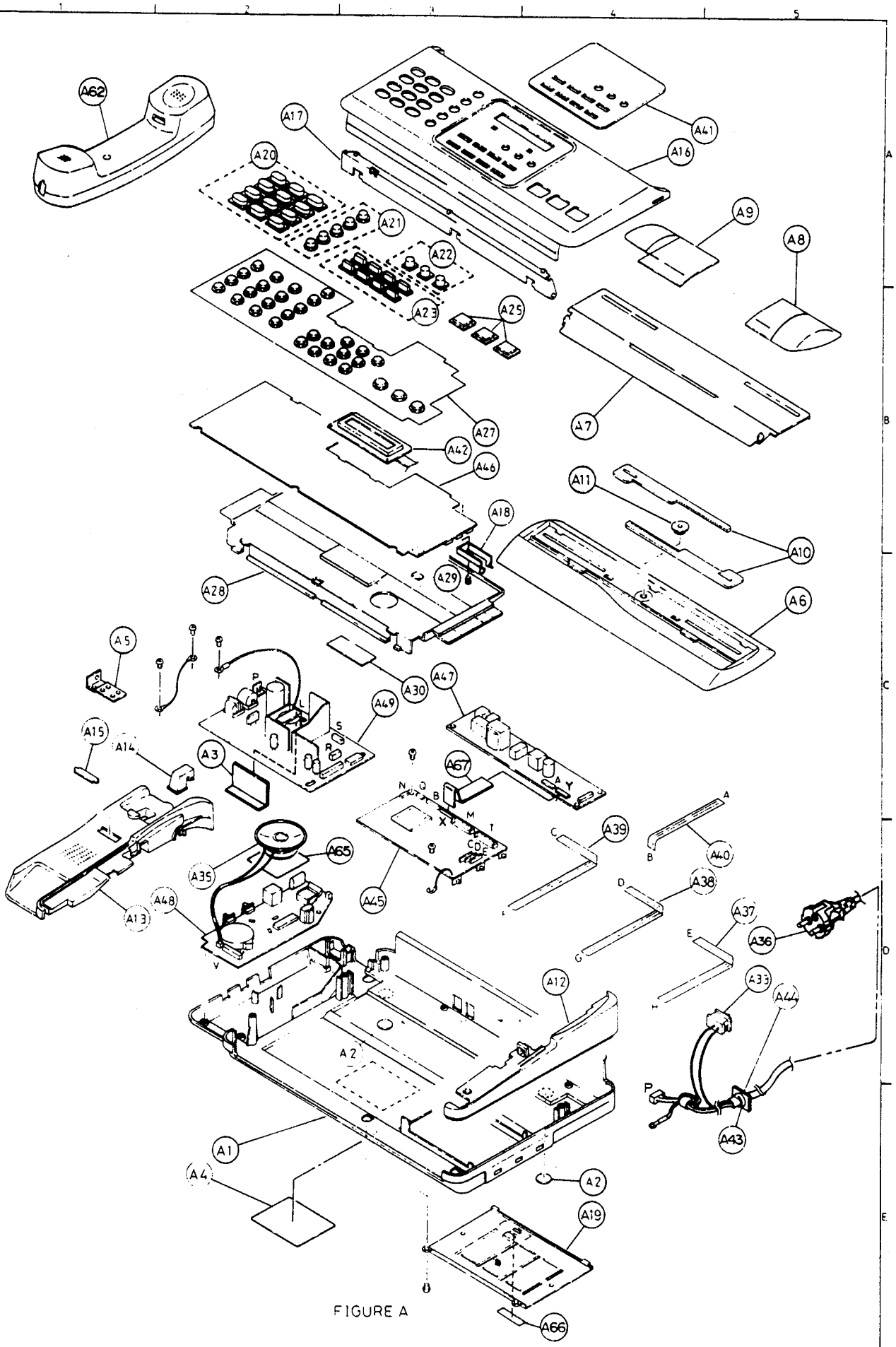
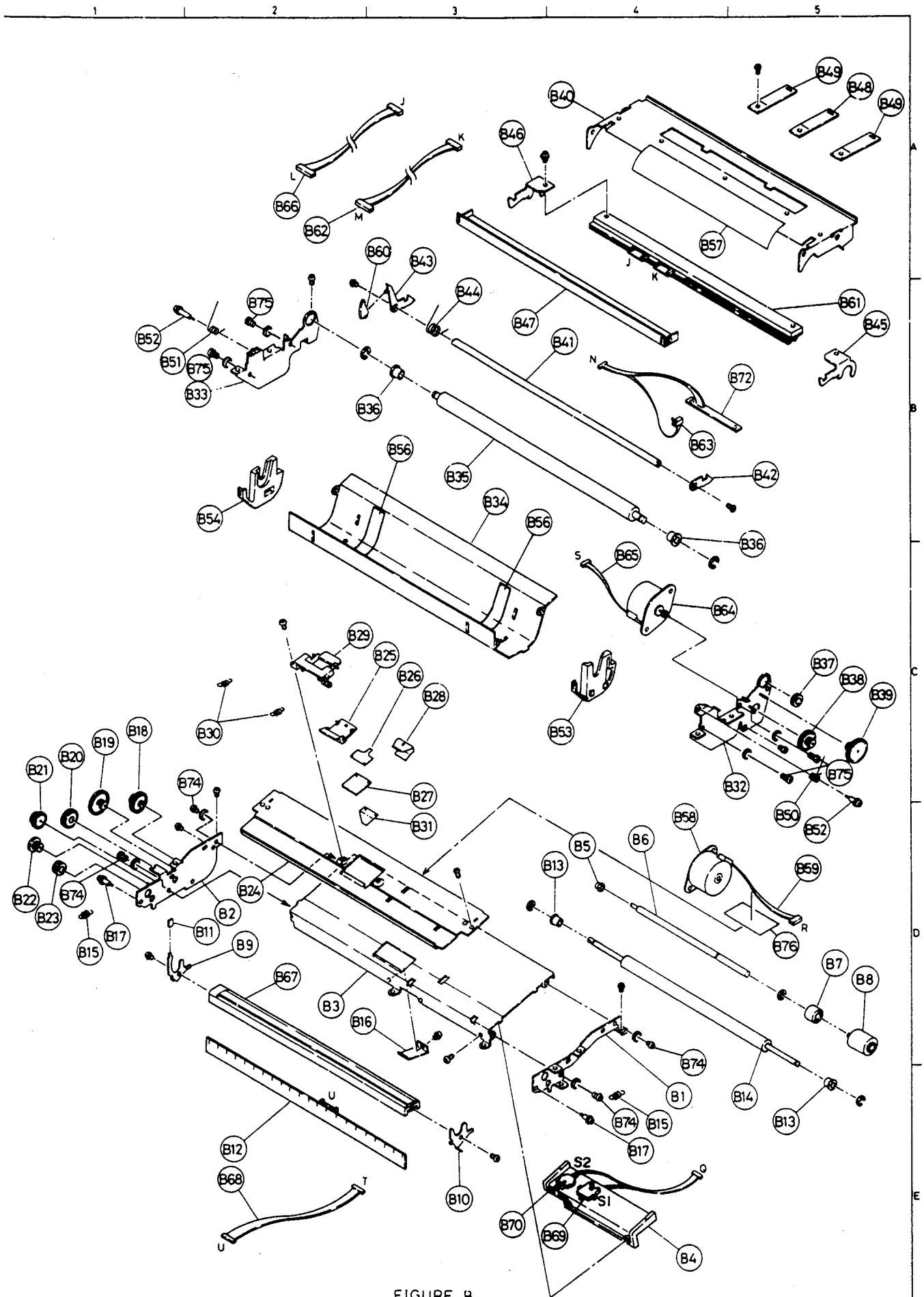


FIGURE A


B1
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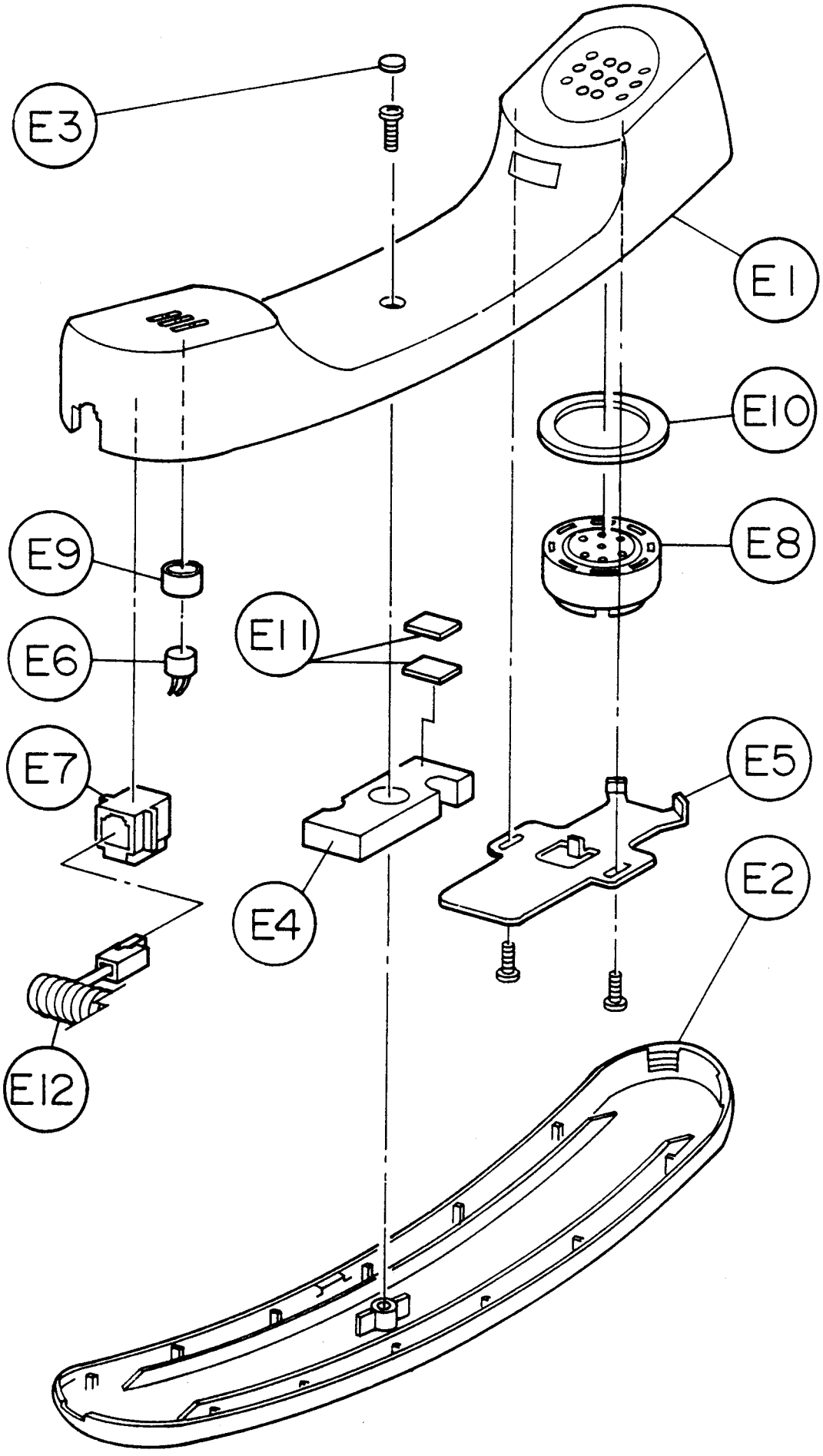
B76
S1
S2

FIGURE 8


E3
E1
E10
E9
E8
E11
E6
E7
E5
E4
E2
E12

16. PARTS LIST

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

Ref.No.	PART No.	DESCRIPTION	Q'ty
INDIVIDUAL			
	632 651 1138	INDIVIDUAL CARTON CASE	1
	632 641 4064	STYRO-FOAM CUSHION, RIGHT	1
	632 654 3696	STYRO-FOAM CUSHION, LEFT	1
	632 301 1808	HANDLE	1
	632 606 9240	PAD, HANDLE	1
	632 637 4115	POLYETHYLENE BAG, 570X550 ,UNIT	1
	632 637 4160	POLYETHYLENE BAG, 285X410 ,HAND SET	1
	632 635 6685	LABEL, RECYCLE CORRUGATE	2
E12	632 657 3204	WIRE HARNESS, CURL 280MM	1
	632 644 8939	WIRE HARNESS, 3000MM,LINE	1
	632 653 7060	INSTRUCTION MANUAL,GERMAN	1
	632 637 4160	POLYETHYLENE BAG, 285X410 ,INSTRUCTION MANUAL ETC.	1
	632 651 7833	ROLL PAPER, A4 15M	1
	632 641 5344	LABEL, ONE TOUCH	1
	632 646 2607	LEAFLET ,GERMAN,ENGLISH	1
	632 654 3139	INDICATION LABEL, RECORDING PAPER ,GERMAN	1
	632 654 3177	INDICATION LABEL, ORIGINAL JAM ,GERMAN	1
	632 654 3184	INDICATION LABEL, COVER ,GERMAN	1
	632 649 8033	PROTECTOR SHEET	1
CABINET			
A1	632 652 3032	BOTTOM LID	1
A3	632 650 1207	INSULATOR, BOTTOM LID-M5 PCB	1
A2	632 530 4052	BASE	2
A4	632 651 1312	RATING LABEL	1
A5	632 639 6445	BRACKET, EARTH	1
	411 008 0501	WASHER OUT TW 4, AC CORD LUG	1
	411 125 6707	SCR BIN 4X5	1
	411 025 6104	SCR S-TPG BIN 3X6, MECHANISM 2,M4 EARTH	2
	411 046 1003	SCR PAN+SW 4X6, M5,AC CORD(EARTH)	2
	411 025 6104	SCR S-TPG BIN 3X6,M3 PCB	3
	⚠ 632 250 0167	WIRE FIXTURE,	2
	411 025 6104	SCR S-TPG BIN 3X6,M1 PCB	2
	411 025 6104	SCR S-TPG BIN 3X6, MECHANISM 2	3
	411 025 6104	SCR S-TPG BIN 3X6, MECHANISM 1	2
A6	632 653 9620	COVER, ROLL PAPER	1
A7	632 653 9507	COVER, GUIDE	1
A8	632 653 9491	GUIDE, R	1
A9	632 653 9484	GUIDE, L	1
A10	632 636 8879	GUIDE, GEAR	2
A11	632 636 8886	GEAR, GUIDE	1
	411 025 6104	SCR S-TPG BIN 3X6, ROLL PAPER COVER	2
B60	632 653 9446	KNOB	1
A12	632 653 9514	CABINET, RIGHT	1
A13	632 653 9583	CABINET, LEFT	1
	632 646 3659	SHEET,CABINET,LEFT	3
A65	632 646 6421	SHEET,SPEAKER	1
A14	632 653 8463	KNOB, TEL	1
A15	632 639 9200	COVER, CABINET TELEPHONE	1
	411 001 2106	SCR S-TPG BIN 3X6, CABINET(R),(L)-MECHANISM	3
	411 025 6609	SCR S-TPG BIN 3X8, CABINET(L)-BOTTOM LID	2
	411 025 6104	SCR S-TPG BIN 3X6,M4 PCB	2
A19	632 640 1897	BACK LID	1
	411 027 1503	SCR S-TPG BIN 2.6X5, BACK LID	2
A66	632 654 3214	LABEL, TONE,BACK LID	1
A16	632 653 9521	PANEL,GERMAN	1
A41	632 653 9354	SIGN WINDOW,GERMAN	1
A17	632 639 6537	BRACKET, PANEL	1
	411 025 6500	SCR S-TPG BIN 3X8, BRACKET-PANEL	3
A18	632 639 6544	PLATE SPRING	1
	411 025 6104	SCR S-TPG BIN 3X6, PLATE SPRING	1
A20	632 653 9439	KNOB, TEN-KEY	1
A21	632 653 9347	KNOB, MODE,SHORTENING KEY	5
A22	632 639 6506	KNOB, FUNCTION H,MENU KEY	3
A23	632 639 6568	KNOB, ONE TOUCH H	8
A25	632 653 9415	KNOB, COPY	3
A27	632 657 0241	SHEET, FPC 11,KEY SHEET	1
	411 025 4209	SCR S-TPG BIN 2X6,M3 PCB	11
	411 025 4209	SCR S-TPG BIN 2X6,LCD	2
A28	632 639 6490	COVER, PANEL	1
A29	632 646 0610	CUSHION, RUBBER, PANEL COVER	1
	411 025 6609	SCR S-TPG BIN 3X8, PANEL COVER	2
A30	632 644 5105	COVER, LCD	1
	632 647 8271	CUSHION, RUBBER	1
MECHANISM 1			
B1	632 636 1061	CHASSIS, R	1
B2	632 636 3256	CHASSIS ASS'Y, L	1
	411 027 2203	SCR S-TPG BIN 3X4,MOTOR	2
B3	632 636 1122	GUIDE, PAPER 1	1
B74	632 658 9366	SPECIAL SCREW, GUIDE-CHASSIS	4
	411 086 2701	WASHER SPR 2.6, GUIDE-CHASSIS	4
B4	632 636 1139	BRACKET, SENSOR	1
	411 026 7704	SCR S-TPG PAN 3X6, SENSOR BRACKET	2
B5	632 636 1146	BRACKET, SHAFT, 1	1
B6	632 636 1153	SHAFT, ADF	1
	411 101 1207	RING E 5,SHAFT ADF	1
B7	632 636 1160	BRACKET, SHAFT	1
B8	632 636 1177	ROLLER, ADF	1
B9	632 647 1968	BRACKET, SENSOR, L	1
B10	632 647 1975	BRACKET, SENSOR, R	1
	411 153 2603	WASHER Y 9X14X1.6	1
	411 047 2306	SCR PAN+FLG 2X4,BRACKET	2
B11	632 636 1207	KNOB	1
B12	632 646 1198	SHEET,CIS	1
B13	632 636 1214	BRACKET, SHAFT, 2	2
B14	632 637 5617	PLATEN, SENSOR A 4	1
	411 101 1108	RING E 4,PLATEN	2
B15	632 648 8584	COIL SPRING	2
B16	632 648 8591	PLATE SPRING, CIS	1
	411 027 1503	SCR S-TPG BIN 2.6X5	1
B17	632 561 1624	SHAFT	2
B18	632 636 1245	GEAR, 1	1
B19	632 636 1252	GEAR, 2	1
B20	632 636 1269	GEAR, 3	1
B21	632 636 1276	GEAR, 4	1
B22	632 636 1283	GEAR, 5	1

NOTES: 1. Part orders must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

Ref.No.	PART No.	DESCRIPTION	Q'ty
B23	632 625 2635	GEAR, 1	1
B24	632 636 1290	GUIDE, PAPER 2	1
B25	632 636 2662	BRACKET, BRAKE, 1	1
B26	632 644 5174	SHEET, BRAKE 1	1
B27	632 636 2679	BRAKE, ADF	1
B28	632 636 1306	PLATE SPRING, ADF	1
B29	632 648 6573	BRACKET, BRAKE, 2	1
B30	632 644 9400	COIL SPRING	2
B31	632 644 5167	SHEET, BRAKE 2	1
	411 152 0907	SCR S-TPG BIN 2X4,BRAKE	2
	411 027 1503	SCR S-TPG BIN 2.6X5,GUIDE	2
B76	632 658 5702	INSULATOR	1
		MECHANISM 2	
B32	632 636 1320	CHASSIS ASS'Y, R	1
	411 027 2203	SCR S-TPG BIN 3X4,MOTOR	2
B33	632 651 4818	CHASSIS, L	1
	411 021 1202	SCR S-TPG BIN 2X8,SWITCH	1
B34	632 637 5594	BRACKET, PAPER 2	1
B75	632 658 9366	SPECIAL SCREW, BRACKET-CHASSIS	4
	411 086 2701	WASHER SPR 2.6, BRACKET-CHASSIS	4
B35	632 646 0603	PLATEN, HEAD	1
B36	632 636 1214	BRACKET, SHAFT, 2	2
	411 101 1108	RING E 4,PLATEN	2
B37	632 625 2635	GEAR, 1	1
B38	632 636 1245	GEAR, 1	1
B39	632 636 1252	GEAR, 2	1
B40	632 636 1375	BRACKET, HEAD HOLDER	1
B41	632 636 1382	SHAFT, OPEN	1
B42	632 636 1399	LEVER, OPEN R	1
B43	632 636 1405	LEVER, OPEN L	1
B44	632 646 0573	TORSION SPRING, LEVER	1
	411 047 4508	SCR PAN+FLG 2.6X4,LEVER	2
B45	632 636 1429	BRACKET, HEAD R	1
B46	632 636 1436	BRACKET, HEAD L	1
	411 047 6809	SCR PAN+FLG 3X4,HEAD	2
B47	632 636 1443	GUIDE, PAPER	1
	411 027 1305	SCR S-TPG BIN 2.6X4,GUIDE	2
B48	632 636 1450	PLATE SPRING, HEAD 1	1
B49	632 636 3508	PLATE SPRING, HEAD 2	2
	411 027 2203	SCR S-TPG BIN 3X4, PLATE SPRING	3
B50	632 636 1467	TORSION SPRING, R	1
B51	632 636 1474	TORSION SPRING, L	1
B52	632 561 1624	SHAFT	2
B53	632 646 0580	GUIDE, PAPER R	1
B54	632 646 0597	GUIDE, PAPER L	1
B56	632 636 8282	SHEET, PAPER	2
B57	632 640 3242	SHEET, CABLE	1
		CHASSIS ELC.	
B61	632 646 9491	THERMAL HEAD ,TPH } OR	1
B61	632 650 9272	THERMAL HEAD ,TPH	1
B62	632 640 5772	WIRE HARNESS, 200MM, TPH-CN5 } OR	1
B62	632 650 9708	WIRE HARNESS, 210MM, TPH-CN5	1
B66	632 640 5505	WIRE HARNESS, 105MM, TPH-CN52	1
B64	632 637 7314	PULSE MOTOR ,RECEPTION	1
B65	632 640 5635	WIRE HARNESS, 190MM, RECEPTION MOTOR-CN53	1
B63 (SW6)	632 542 7942	MICRO SWITCH	1
CN8	632 573 7119	HOUSING, CONNECTOR 8P	1
	632 573 7096	TERMINAL, SOCKET PIN ,CN8	7
B67	632 650 4703	SENSOR, IMAGE	1
B68	632 655 7426	WIRE HARNESS, 180MM, CIS-CN6	1
B58	632 637 7314	PULSE MOTOR ,TRANSMISSION	1
B59	632 640 5680	WIRE HARNESS, 150MM, TRANSMISSION MOTOR-CN54	1
B69 (S1)	407 102 4606	PHOTO COUPLE OS-9560-101	1

Ref.No.	PART No.	DESCRIPTION	Q'ty
B70 (S2)	408 015 7609	PC OS-560203-106	1
CN7	632 637 0681	HOUSING, CONNECTOR	1
	632 573 7096	TERMINAL, SOCKET PIN ,CN7	6
A36 ⚠	632 255 5952	AC CORD, 2100MM } OR	1
A36 ⚠	632 548 6512	AC CORD, 2100MM	1
	632 510 9602	CORE	2
	632 570 6788	TERMINAL, AC CORD EARTH	1
CN55	632 253 6630	SOCKET, 3P	1
	632 287 5128	TERMINAL ,CN55	2
A33 ⚠	632 257 4885	SEESAW SWITCH,	1
A37	632 643 5373	JUMPER LEAD, 11P 180MM, CN2/1-CN21	1
A38	632 651 2203	JUMPER LEAD,172MM 10P, CN2/2-CN22	1
A39	632 651 2234	JUMPER LEAD, 164MM 9P, CN2/3-CN23	1
A40	632 643 5359	JUMPER LEAD, 20P 110MM, CN3/1-CN31	1
A67	632 643 5397	JUMPER LEAD, 5P 110MM, CN3/2-CN32	1
	632 637 0629	TERMINAL, PRINTER MECHANISM-EARTH	2
A42	632 654 5157	LIQUID CRYSTAL DISPLAY	1
	632 286 2500	LUG	1
A35	632 249 6729	SPEAKER, 16 OHM	1
	632 643 7957	SOCKET, 2P 70MM ,SPEAKER	1
	632 301 2300	HOUSING, 6P	2
	632 301 2270	HOUSING, 3P	2
	632 287 6408	TERMINAL	18
A43	632 300 8631	BUSHING	1
A44	632 280 7600	BRACKET, AC CORD	1
	632 286 2500	LUG ,PANEL-EARTH	1
		PC BOARD 1	
A45	632 647 5454	PW BOARD ASS'Y, M 1 MAIN	1
IC1	409 281 0301	IC TC35168F	1
	632 636 6530	SOCKET, IC 32P (IC25)	1
IC25	410 152 8005	IC TMS27C010A-15JL/9221A } OR	1
IC25	410 152 8104	IC NM27C010Q150/9221A	1
IC25	410 152 8203	IC AT27C010-15DC/9221A	1
IC10	409 146 4703	IC LC3564PML-15 } OR	1
IC10	409 137 0608	IC LC3564PML-12	1
IC10	409 240 1004	IC LH5160N-10L	1
IC16	409 146 4703	IC LC3564PML-15 } OR	1
IC16	409 137 0608	IC LC3564PML-12	1
IC16	409 240 1004	IC LH5160N-10L	1
IC19	409 166 1805	IC SN74HC04NS } OR	1
IC19	409 166 2208	IC TC74HC04AF	1
IC24	409 166 1805	IC SN74HC04NS } OR	1
IC24	409 166 2208	IC TC74HC04AF	1
IC20	409 175 1001	IC SN74HC08NS } OR	1
IC20	409 174 6601	IC TC74HC08AF	1
IC18	409 166 2000	IC SN74HC32NS } OR	1
IC18	409 166 2307	IC TC74HC32AF	1
IC27	409 166 2000	IC SN74HC32NS } OR	1
IC27	409 166 2307	IC TC74HC32AF	1
IC26	409 166 2109	IC SN74HC74NS } OR	1
IC26	409 166 2406	IC TC74HC74AF	1
IC12	409 184 9302	IC SN74HC273NS } OR	1
IC12	409 172 7808	IC TC74HC273AF	1
IC9	409 051 2900	IC TC4053BF } OR	1
IC9	409 155 4206	IC BU4053BF	1
IC14	409 067 2406	IC TC4093BF } OR	1
IC14	409 176 1802	IC BU4093BF	1
IC17	409 074 6909	IC TC4584BF } OR	1
IC17	409 176 1901	IC BU4584BF	1
IC23	409 074 6909	IC TC4584BF } OR	1
IC23	409 176 1901	IC BU4584BF	1
IC2	409 281 0400	IC TC35123F	1
IC13	409 074 9603	IC M51957BFP	1
IC7	409 241 8200	IC RC082BM } OR	1
IC7	409 039 4704	IC NJM082BM	1
IC3-6	409 049 4602	IC TA75558F } OR	4
IC3-6	409 018 5302	IC LA6462M	4
IC21	410 104 5007	IC AFM94F440C15	1
IC22	410 076 1007	IC AFB87F1000C1	1

NOTES: 1. Part orders must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

Ref.No.	PART No.	DESCRIPTION	Q'ty
CN1	632 637 0919	PLUG, 15P	1
CN2/1	632 637 1053	CONNECTOR, 11P	1
CN2/2	632 637 1046	CONNECTOR, 10P	1
CN2/3	632 637 1039	CONNECTOR, 9P	1
CN3/1	632 637 1060	CONNECTOR, 20P	1
CN5,6	632 637 0810	PLUG, 10P	2
CN7	632 637 0896	PLUG, 9P	1
CN8	632 637 0858	PLUG, 8P	1
CN3/2	632 637 1022	CONNECTOR, 5P	1
SW1,2	632 636 8275	SLIDE SWITCH	2
SW3	632 636 8268	SLIDE SWITCH	1
SW4	632 646 8050	SLIDE SWITCH	1
SW5	632 637 9646	SLIDE SWITCH(DP/PB)	1
L1,2	632 588 9528	CORE	2
XTAL 1	632 637 0766	CERAMIC OSC., 12.5 MHZ	1
XTAL 2	632 631 5743	CRYSTAL OSC., 32.768 KHZ	1
XTAL 3	632 648 0533	CRYSTAL OSC., 20.736 MHZ	1
BATT	632 636 6547	LITHIUM CELL	1
Q8	405 044 1301	TR 2SA1510	1
Q7	405 018 1900	TR 2SC3395-TA	1
Q2	405 047 6402	TR 2SD1623-T	1
Q3-6	405 018 2402	TR 2SC3398	4
D1-3	407 004 1000	DIODE DCC010	3
C6,8	404 055 3908	ELECT 0.1U M 50V	2
C3,7	404 055 4004	ELECT 0.22U M 50V	2
C15	404 049 8001	ELECT 0.47U M 50V	1
C63	404 050 2005	ELECT 1U M 50V	1
C2,5	404 049 7707	ELECT 10U M 16V	2
C9,10	404 049 7707	ELECT 10U M 16V	2
C11,14	404 049 7707	ELECT 10U M 16V	2
C1	403 204 4407	ELECT 10U M 50V	1
C16	403 184 8402	ELECT 4.7U M 25V	1
C72	403 008 7505	CERAMIC 10P D 50V	1
C24	403 014 3409	CERAMIC 18P J 50V	1
C52	403 008 7406	CERAMIC 10P D 50V	1
C89	403 012 6808	CERAMIC 15P J 50V	1
C90	403 012 6808	CERAMIC 15P J 50V	1
C25,26	403 022 2609	CERAMIC 30P J 50V	2
C36,41	403 009 5807	CERAMIC 100P J 50V	2
C48,55	403 009 5807	CERAMIC 100P J 50V	2
C92	403 014 9302	CERAMIC 180P J 50V	1
C35,61	403 018 7502	CERAMIC 220P J 50V	2
C66,67	403 026 7600	CERAMIC 470P J 50V	2
C68,70	403 026 7600	CERAMIC 470P J 50V	2
C71,73	403 026 7600	CERAMIC 470P J 50V	2
C85,86	403 026 7600	CERAMIC 470P J 50V	2
C44	403 130 4106	CERAMIC 0.068U K 25V	1
C53,59	403 069 1702	CERAMIC 1000P K 50V	2
C19,21	403 069 1702	CERAMIC 1000P K 50V	2
C62	403 071 8102	CERAMIC 2200P K 50V	1
C99	403 068 3202	CERAMIC 0.033U K 25V	1
C34	403 069 5601	CERAMIC 0.01U K 50V	1
C38,40	403 192 5905	CERAMIC 0.1U K 25V	2
C49,56	403 192 5905	CERAMIC 0.1U K 25V	2
C81,83	403 192 5905	CERAMIC 0.1U K 25V	2
C84	403 192 5905	CERAMIC 0.1U K 25V	1
C22	403 185 8708	CERAMIC 1U Z 16V	1
C12,17	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C12,17	403 068 0409	CERAMIC 0.1U Z 25V }	2
C18,27	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C18,27	403 068 0409	CERAMIC 0.1U Z 25V }	2
C29-33	404 051 8006	CERAMIC 0.1U Z 25V } OR	5
C29-33	403 068 0409	CERAMIC 0.1U Z 25V }	5
C37,39	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C37,39	403 068 0409	CERAMIC 0.1U Z 25V }	2
C42,43	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C42,43	403 068 0409	CERAMIC 0.1U Z 25V }	2
C45-47	404 051 8006	CERAMIC 0.1U Z 25V } OR	3
C45-47	403 068 0409	CERAMIC 0.1U Z 25V }	3
C50,51	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C50,51	403 068 0409	CERAMIC 0.1U Z 25V }	2
C54,57	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C54,57	403 068 0409	CERAMIC 0.1U Z 25V }	2
C58,60	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C58,60	403 068 0409	CERAMIC 0.1U Z 25V }	2
C64,65	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C64,65	403 068 0409	CERAMIC 0.1U Z 25V }	2

Ref.No.	PART No.	DESCRIPTION	Q'ty
C74-77	404 051 8006	CERAMIC 0.1U Z 25V } OR	4
C74-77	403 068 0409	CERAMIC 0.1U Z 25V }	4
C80,87	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C80,87	403 068 0409	CERAMIC 0.1U Z 25V }	2
C88,91	404 051 8006	CERAMIC 0.1U Z 25V } OR	2
C88,91	403 068 0409	CERAMIC 0.1U Z 25V }	2
C93-96	404 051 8006	CERAMIC 0.1U Z 25V } OR	4
C93-96	403 068 0409	CERAMIC 0.1U Z 25V }	4
JP1	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
R14,51	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	2
R58	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
JP7-13	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	7
JP15	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
JP17	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
R89	401 037 9101	MT-GLAZE 180 JA 1/10W	1
R77	401 037 9101	MT-GLAZE 180 JA 1/10W	1
R35	401 038 0602	MT-GLAZE 220 JA 1/10W	1
R104	401 038 5102	MT-GLAZE 3.9K JA 1/10W	1
R12,45	401 038 3504	MT-GLAZE 330 JA 1/10W	2
R1,3,5	401 038 6307	MT-GLAZE 470 JA 1/10W	3
R74	401 038 7601	MT-GLAZE 560 JA 1/10W	1
R19,44	401 037 5400	MT-GLAZE 1K JA 1/10W	2
R63,85	401 037 5400	MT-GLAZE 1K JA 1/10W	2
R87,90	401 037 5400	MT-GLAZE 1K JA 1/10W	2
R9,31	401 037 6704	MT-GLAZE 1.2K JA 1/10W	2
R83,86	401 038 0701	MT-GLAZE 2.2K JA 1/10W	2
R21	401 038 0701	MT-GLAZE 2.2K JA 1/10W	1
R11,13	401 038 0701	MT-GLAZE 2.2K JA 1/10W	2
R103	401 038 3603	MT-GLAZE 3.3K JA 1/10W	1
R40	401 038 5102	MT-GLAZE 3.9K JA 1/10W	1
R78	401 038 6406	MT-GLAZE 4.7K JA 1/10W	1
R30	401 038 9209	MT-GLAZE 6.8K JA 1/10W	1
R20	401 039 0403	MT-GLAZE 8.2K JA 1/10W	1
R42	401 038 3702	MT-GLAZE 33K JA 1/10W	1
R18	401 037 5608	MT-GLAZE 10K JA 1/10W	1
R22-24	401 037 5608	MT-GLAZE 10K JA 1/10W	3
R41,59	401 037 5608	MT-GLAZE 10K JA 1/10W	2
R60,75	401 037 5608	MT-GLAZE 10K JA 1/10W	2
R91	401 037 5608	MT-GLAZE 10K JA 1/10W	1
R27	401 037 8005	MT-GLAZE 15K JA 1/10W	1
R32,50	401 038 3603	MT-GLAZE 3.3K JA 1/10W	2
R2,4,6	401 038 0800	MT-GLAZE 22K JA 1/10W	3
R62,76	401 038 0800	MT-GLAZE 22K JA 1/10W	2
R61	401 037 5608	MT-GLAZE 10K JA 1/10W	1
R66,84	401 038 6505	MT-GLAZE 47K JA 1/10W	2
R16,17	401 038 7809	MT-GLAZE 56K JA 1/10W	2
R36,38	401 038 7809	MT-GLAZE 56K JA 1/10W	2
R39,46	401 038 7809	MT-GLAZE 56K JA 1/10W	2
R64,65	401 038 7809	MT-GLAZE 56K JA 1/10W	2
R100	401 038 7809	MT-GLAZE 56K JA 1/10W	1
R93	401 038 7809	MT-GLAZE 56K JA 1/10W	1
R105	401 038 7809	MT-GLAZE 56K JA 1/10W	1
R47	401 038 9308	MT-GLAZE 68K JA 1/10W	1
R49,70	401 038 9209	MT-GLAZE 6.8K JA 1/10W	2
R73	401 038 9209	MT-GLAZE 6.8K JA 1/10W	1
R101	401 039 0502	MT-GLAZE 82K JA 1/10W	1
R7,43	401 037 5707	MT-GLAZE 100K JA 1/10W	2
R57,69	401 037 5707	MT-GLAZE 100K JA 1/10W	2
R33	401 037 5707	MT-GLAZE 100K JA 1/10W	1
R80	401 038 3801	MT-GLAZE 330K JA 1/10W	1
R102	401 038 5409	MT-GLAZE 390K JA 1/10W	1
R67,68	401 037 5806	MT-GLAZE 1M JA 1/10W	2
R81,82	401 037 5806	MT-GLAZE 1M JA 1/10W	2
R52,54	401 038 1401	MT-GLAZE 24K JA 1/10W	2
R53	401 038 9803	MT-GLAZE 75K JA 1/10W	1
RA1-6	632 638 6538	RESISTOR BLOCK, 56KX4	6
R28	401 037 6803	MT-GLAZE 12K JA 1/10W	1
	632 286 2500	LUG ,M1-SCANNER MECHANISM	1
R55	401 038 7809	MT-GLAZE 56K JA 1/10W	1
R25,56	401 037 8104	MT-GLAZE 150K JA 1/10W	2
R10	401 037 7800	MT-GLAZE 150 JA 1/10W	1
R8	401 038 9001	MT-GLAZE 680 JA 1/10W	1

PC BOARD 2

A46	632 640 2993	PW BOARD ASS'Y, M 2 OPERATION	1

NOTES: 1. Part orders must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

Ref.No.	PART No.	DESCRIPTION	Q'ty
IC201	409 175 1308	IC SN74HC138NS } OR	1
IC201	409 086 8908	IC LC74HC138M }	1
	420 001 1408	PZ BZR PKM22EPP-2001	1
CN24	632 643 0255	CONNECTOR, 16P	1
CN21	632 637 1008	CONNECTOR, 11P	1
CN22	632 637 0995	CONNECTOR, 10P	1
CN23	632 637 0988	CONNECTOR, 9P	1
LED201	407 116 6504	LED SLP-181B-51 (ERROR/RED)	1
LED202	407 065 5702	LED SLP-281B-51 (ANSWER/GREEN)	1
D201	407 139 5904	DIODE FC903	1
D202	407 139 5904	DIODE FC903	1
D203	407 065 2909	DIODE DWA010	1
R201	401 036 4701	MT-GLAZE 330 JA 1/8W	1
R202	401 035 7703	MT-GLAZE 150 JA 1/8W	1
	401 035 4108	MT-GLAZE 0.000 ZA 1/8W	12
PC BOARD 3			
A47	632 647 5461	PW BOARD ASS'Y, M 3 NCU	1
T301	632 519 8453	TRANSFORMER, MODULATION	1
T302	632 638 2004	TRANSFORMER, LINE	1
RLA	632 624 3893	RELAY	1
RLB	632 257 3116	RELAY	1
RLD	632 257 3116	RELAY	1
RLE	632 655 5118	RELAY	1
IC302	407 079 0502	PHOTO COUPLE TLP621-2	1
IC304	409 295 1004	IC THS-52	1
IC301	409 019 8005	IC LB1234 } OR	1
IC301	409 257 6504	IC LB1234ST }	1
VA301	407 045 9607	VARISTOR VR-61SS } OR	1
VA301	407 045 9409	VARISTOR VR-61B }	1
VA302	407 045 9607	VARISTOR VR-61SS } OR	1
VA302	407 045 9409	VARISTOR VR-61B }	1
VA303	407 045 9607	VARISTOR VR-61SS } OR	1
VA303	407 045 9409	VARISTOR VR-61B }	1
VA305	407 045 9607	VARISTOR VR-61SS } OR	1
VA305	407 045 9409	VARISTOR VR-61B }	1
LF303	632 549 9291	CHOKE COIL, 60UH	1
LF304	632 549 9291	CHOKE COIL, 60UH	1
LF301	632 534 7523	CHOKE COIL	1
LF302	632 534 7523	CHOKE COIL	1
D303	407 072 0202	DIODE DSF10TE	1
D304	407 072 0202	DIODE DSF10TE	1
D305	407 072 0202	DIODE DSF10TE	1
D306	407 072 0202	DIODE DSF10TE	1
TR301	405 017 9501	TR 2SC3330-S	1
JK31	632 251 5963	SOCKET, 6P	1
CN31	632 637 1015	CONNECTOR, 20P	1
CN32	632 637 0971	CONNECTOR, 5P	1
CN33	632 254 0019	PLUG, 6P	1
CN34	632 253 9983	PLUG, 3P	1
C311	403 085 8808	NP-ELECT 220U M 25V	1
ARR302	632 617 2292	DISCHARGE TUBE } OR	1
ARR302	632 654 3900	DISCHARGE TUBE }	1
ZD301	407 050 0408	ZENER DIODE GZA27Y } OR	1
ZD301	407 060 4908	ZENER DIODE MTZ27C }	1
ZD302	407 050 0408	ZENER DIODE GZA27Y } OR	1
ZD302	407 060 4908	ZENER DIODE MTZ27C }	1
C303	403 161 9200	MT-POLYEST 0.22U K 250V	1
C305	403 161 9101	MT-POLYEST 0.047U K 250V	1
C306	403 167 3509	MT-POLYEST 0.56U K 250V	1
C310	403 167 3509	MT-POLYEST 0.56U K 250V	1
C308	403 149 7006	MT-POLYEST 0.022U K 250V	1
C316	403 149 7006	MT-POLYEST 0.022U K 250V	1
C309	403 060 5204	POLYESTER 3300P J 50V	1
C312	403 062 0702	POLYESTER 0.047U K 50V	1
C313	403 134 5505	ELECT 10U M 25V	1
C314	403 134 5505	ELECT 10U M 25V	1
C317	403 121 3002	ELECT 4.7U M 25V	1
R303	401 094 6006	OXIDE-MT 82 JB 2W	1
R304	401 066 6607	OXIDE-MT 220 JB 2W	1
R301	401 094 6709	OXIDE-MT 560 JB 1W	1
R306	401 128 7603	OXIDE-MT 100K JB 1W	1
R307	401 099 3307	OXIDE-MT 27K JB 1W	1
R315	401 024 7608	CARBON 10K JA 1/6W	1
R316	401 026 7200	CARBON 3.9K JA 1/6W	1

Ref.No.	PART No.	DESCRIPTION	Q'ty
	632 286 2500	LUG	2
PC BOARD 4			
A48	632 647 5478	PW BOARD ASS'Y, M 4 TELEPHONE	1
CN41	632 254 0019	PLUG, 6P	1
CN42	632 253 9983	PLUG, 3P	1
CN43	632 253 9976	PLUG, 2P	1
MJ	632 251 5949	SOCKET, 4P	1
BZ	420 001 0906	PIEZO BUZZER PKM33EP-1001	1
HSW	632 651 9950	PUSH SWITCH, HOOK	1
SW4,5	632 636 8275	SLIDE SWITCH	2
ZNR401	632 635 7699	DISCHARGE TUBE	1
L401	632 636 6721	CHOKE COIL, 0.0018H } OR	1
L401	632 637 5204	COIL }	1
L402	632 636 6721	CHOKE COIL, 0.0018H } OR	1
L402	632 637 5204	COIL }	1
L403 -406	632 549 9291	CHOKE COIL, 60UH	4
IC401	409 294 7007	IC TA31065FA	1
IC402	409 279 6902	IC SAA1094-2	1
IC403	409 203 2802	IC MC34119M	1
OSC1	632 635 6364	CERAMIC OSC., 455 KHZ } OR	1
OSC1	632 638 6460	CERAMIC OSC., 455 KHZ }	1
ZD401A	407 051 3507	ZENER DIODE GZB7.5B	1
ZD401B	407 051 3507	ZENER DIODE GZB7.5B	1
ZD402	407 156 1606	ZENER DIODE RLZ6.2B	1
ZD403	407 156 1606	ZENER DIODE RLZ6.2B	1
ST1	407 100 1300	DIODE S1ZB40	1
D401	407 108 3801	DIODE DCG010	1
D403	407 004 1000	DIODE DCC010	1
D404	407 004 1000	DIODE DCC010	1
	632 286 2500	LUG ,EARTH	1
D402A	407 077 3109	DIODE SB0015-03A	1
D402B	407 077 3109	DIODE SB0015-03A	1
R408	401 113 1906	MT-GLAZE 15 JA 1/2W	1
R409	401 181 9408	MT-GLAZE 56 JA 1/2W	1
R407	401 151 1807	MT-GLAZE 150 JA 1/2W	1
R401	401 183 7501	MT-GLAZE 560 JA 1/2W	1
R450	401 185 3600	MT-GLAZE 2.2K JA 1/2W	1
J1,3,4	401 035 4108	MT-GLAZE 0.000 ZA 1/8W	3
R403	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
R419	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
J2	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	1
R453	401 037 5202	MT-GLAZE 100 JA 1/10W	1
R420	401 038 0008	MT-GLAZE 200 JA 1/10W	1
R411	401 038 0701	MT-GLAZE 2.2K JA 1/10W	1
R404	401 038 9605	MT-GLAZE 750 JA 1/10W	1
R412	401 039 0304	MT-GLAZE 820 JA 1/10W	1
R416	401 037 5400	MT-GLAZE 1K JA 1/10W	1
R426	401 037 5400	MT-GLAZE 1K JA 1/10W	1
R430	401 037 5400	MT-GLAZE 1K JA 1/10W	1
R425	401 037 7909	MT-GLAZE 1.5K JA 1/10W	1
R422	401 038 5102	MT-GLAZE 3.9K JA 1/10W	1
R410	401 038 6406	MT-GLAZE 4.7K JA 1/10W	1
R454	401 038 7700	MT-GLAZE 5.6K JA 1/10W	1
R451	401 038 9209	MT-GLAZE 6.8K JA 1/10W	1
R415	401 038 9704	MT-GLAZE 7.5K JA 1/10W	1
R417	401 038 9704	MT-GLAZE 7.5K JA 1/10W	1
R406	401 039 1004	MT-GLAZE 9.1K JA 1/10W	1
R414	401 037 6209	MT-GLAZE 11K JA 1/10W	1
R418	401 037 6209	MT-GLAZE 11K JA 1/10W	1
R405	401 037 6803	MT-GLAZE 12K JA 1/10W	1
R424	401 037 8005	MT-GLAZE 15K JA 1/10W	1
R421	401 038 0800	MT-GLAZE 22K JA 1/10W	1
R432	401 038 0800	MT-GLAZE 22K JA 1/10W	1
R435	401 038 6505	MT-GLAZE 47K JA 1/10W	1
R452	401 038 7304	MT-GLAZE 51K JA 1/10W	1
R431	401 037 5707	MT-GLAZE 100K JA 1/10W	1
R434	401 038 0909	MT-GLAZE 220K JA 1/10W	1
R433	401 038 5409	MT-GLAZE 390K JA 1/10W	1
C450	403 158 9305	MT-POLYEST 0.47U K 250V	1
C452	403 060 8304	POLYESTER 0.033U K 50V	1
C401	403 075 7101	CERAMIC 1000P K 500V	1
C431	403 139 2707	ELECT 1U M 50V	1
C434	403 139 2707	ELECT 1U M 50V	1
C432	403 121 3002	ELECT 4.7U M 25V	1

NOTES: 1. Part orders must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

Ref.No.	PART No.	DESCRIPTION	Q'ty
C451	403 129 5800	ELECT 22U M 35V	1
C419	403 134 8100	ELECT 100U M 6.3V	1
C421	403 134 8100	ELECT 100U M 6.3V	1
C420	403 109 5707	ELECT 220U M 25V	1
C408	403 218 6800	ELECT 220U M 16V	1
C433	403 009 9409	CERAMIC 100P K 50V	1
C418	403 069 5601	CERAMIC 0.01U K 50V	1
C409	403 070 9803	CERAMIC 0.015U K 50V	1
C413	403 071 3503	CERAMIC 0.018U K 50V	1
C415	403 071 3503	CERAMIC 0.018U K 50V	1
C453	403 071 3503	CERAMIC 0.018U K 50V	1
C414	403 068 2007	CERAMIC 0.022U K 25V	1
C416	403 068 2007	CERAMIC 0.022U K 25V	1
C412	403 072 5902	CERAMIC 0.027U K 50V	1
C402	403 130 3802	CERAMIC 0.056U K 25V	1
C404	403 130 3802	CERAMIC 0.056U K 25V	1
C410	403 192 5905	CERAMIC 0.1U K 25V	1
C411	403 070 1005	CERAMIC 0.1U K 50V	1
		PC BOARD 5	
A49	632 654 0367	PW BOARD ASS'Y, M 5 POWER SUPPLY	1
T501	632 649 1355	INVERTER TRANSFORMER	1
L501	632 650 9104	CHOKE COIL, 0.01H	1
L502	632 650 9104	CHOKE COIL, 0.01H	1
F501	423 005 9500	FUSE 250V 2A	1
	632 621 2363	HOLDER, FUSE	2
LC501	632 503 3204	CAPACITOR, 22000PX2	1
CR501	632 575 8244	COMPOSITE,C&R,1000P,22OHM	1
Z501	407 130 5804	VARISTOR SNR471KD05	1
Q501	405 098 7908	TR 2SK951	1
	632 620 7154	CORE ,Q501	1
Q502	405 017 9600	TR 2SC3330-T	1
Q503	405 095 9608	TR 2SK1094	1
Q505	405 037 0809	TR 2SC4048 } OR	1
Q505	405 000 3806	TR DTC114YS } OR	1
Q504	405 036 3702	TR 2SA1564 } OR	1
Q504	405 000 0904	TR DTA114YS } OR	1
D501	407 133 7508	DIODE RB-156	1
D502	407 115 5003	DIODE ERB44-08	1
D503	407 006 0100	DIODE ERA91-02	1
D504	407 007 1403	DIODE ESAC92M-02	1
ZD501	407 050 2105	ZENER DIODE GZA30X	1
ZD503	407 050 5403	ZENER DIODE GZA5.6X	1
ZD502	407 047 2002	ZENER DIODE DZB27C	1
IC501	409 281 6303	IC FA5311P	1
TH501	407 015 1808	THERMISTOR 10D-9	1
P501	408 017 2305	PC TLP634(D4-GR-LF2)	1
C501	404 054 9703	MT-POLYEST 0.22U M 250V	1
C503	404 046 6901	MT-POLYEST 0.1U M 250V	1
C504 -506	404 026 8901	CERAMIC 2200P M -	3
C507	404 026 9106	CERAMIC 4700P M -	1
C508	404 026 9106	CERAMIC 4700P M -	1
C513	403 142 3609	CERAMIC 1000P K 50V	1
C519	403 073 8407	CERAMIC 4700P K 50V	1
C509	404 057 5009	ELECT 68U M 400V	1
C510	403 256 5704	ELECT 2.2U M 400V	1
C511	403 245 6408	ELECT 33U M 35V	1
C517	403 218 1508	ELECT 1000U M 35V	1
C518	403 206 0803	ELECT 470U M 35V	1
C512	403 237 8007	MT-COMPO 0.1U J 50V	1
C514	403 237 8007	MT-COMPO 0.1U J 50V	1
C515	403 237 8007	MT-COMPO 0.1U J 50V	1
R501	401 012 9300	CARBON 1M JA 1/4W	1
R502	401 087 9601	CARBON 270K JA 1/2W	1
R503	401 087 9601	CARBON 270K JA 1/2W	1
R504 -507	401 098 7009	OXIDE-MT 39K JB 1W	4
R508	402 034 9200	MT-GLAZE 0.22 K- 2W	1
R509	401 012 8006	CARBON 100K JA 1/4W	1
R520	401 012 8006	CARBON 100K JA 1/4W	1
R510	401 019 9709	CARBON 47 JB 1/4W	1
R511	401 027 5007	CARBON 68 JA 1/6W	1
R512	401 020 1907	CARBON 4.7K JA 1/4W	1
R513	401 018 3708	CARBON 3.3K JA 1/4W	1
R514	401 018 3807	CARBON 3.3K JA 1/4W	1

Ref.No.	PART No.	DESCRIPTION	Q'ty
R515	401 012 5708	CARBON 1K JA 1/4W	1
R516	401 019 2908	CARBON 39K JA 1/4W	1
R519	401 019 2908	CARBON 39K JA 1/4W	1
R517	401 013 6308	CARBON 12K JA 1/4W	1
R518	401 012 5609	CARBON 1K JA 1/4W	1
VR501	632 246 9365	PRESET RESISTOR, 6.8K	1
TF501	424 002 5007	FUSE THRM 250V 2.5A 115C	1
R528	401 015 4609	CARBON 180K JA 1/4W	1
CN51	632 637 1077	SOCKET, 15P	1
CN52	632 253 9914	PLUG, 10P	1
CN55	632 253 7880	PLUG, 2P	1
CN56	632 650 9500	PLUG, 12P	1
	632 650 1184	HEAT SINK, 1	1
	632 650 1191	HEAT SINK, 2	1
	632 287 5722	TERMINAL ,A1-A2,B1	3
	632 582 7483	CORE ,B1	1
	632 637 0629	TERMINAL, EARTH ,B1	1
	632 643 7315	BRACKET, HOLDER ,TF501	1
	411 001 4506	SCR S-TPG PAN 3X8, Q501,D504	2
T502	632 647 8097	INVERTER TRANSFORMER	1
Q506	405 048 3806	TR 2SD1815-S	1
Q507	405 017 9600	TR 2SC3330-T	1
IC502	409 160 7704	IC LM2940CT-5.0	1
D505 -507	407 006 0100	DIODE ERA91-02	3
D508	407 005 4703	DIODE DS446	1
D509	407 005 4703	DIODE DS446	1
ZD504	407 049 6107	ZENER DIODE GZA11Z	1
C525	403 165 4706	ELECT 100U M 10V	1
C527	403 165 4706	ELECT 100U M 10V	1
C528	403 204 6906	ELECT 100U M 16V	1
C520	403 237 8007	MT-COMPO 0.1U J 50V	1
C524	403 237 8007	MT-COMPO 0.1U J 50V	1
C529	403 237 8007	MT-COMPO 0.1U J 50V	1
C522	403 263 1201	ELECT 2.2U M 200V	1
C523	403 061 7306	POLYESTER 4700P J 50V	1
R524	401 012 6903	CARBON 10K JA 1/4W	1
R525	401 016 2505	CARBON 220 JA 1/4W	1
R526	401 017 0708	CARBON 270 JA 1/4W	1
R527	401 020 2805	CARBON 47K JA 1/4W	1
	632 648 5798	PW BOARD ASS'Y,MTR.DRIVER	1
IC551	409 124 0604	IC LB1205-L	(1)
IC552	409 124 0604	IC LB1205-L	(1)
ZD551	407 047 1104	ZENER DIODE DZB16C	(1)
ZD552	407 047 1104	ZENER DIODE DZB16C	(1)
CN57	632 650 9517	SOCKET, 12P	(1)
CN54	632 254 0118	PLUG, 6P	(1)
CN53	632 254 0118	PLUG, 6P	(1)
		PC BOARD 14	
B72	632 636 7612	PW BOARD ASS'Y, SENSOR	1
PC4	407 126 4101	PHOTO COUPLE GP2L22B	1
PC5	407 126 4101	PHOTO COUPLE GP2L22B	1
		HAND SET	
A62	632 653 8487	HAND SET ASS'Y	1
E1	632 653 8494	CABINET ASS'Y	(1)
E2	632 653 9460	BOTTOM LID	(1)
E3	632 609 5393	COVER	(1)
E4	632 293 4221	WEIGHT	(1)
E5	632 634 8734	BRACKET, SPEAKER	(1)
	411 026 0507	SCR S-TPG PAN 2.6X10	(2)
	411 026 2303	SCR S-TPG PAN 3X10	(1)
E6	632 646 6834	MICROPHONE	(1)
	407 050 7605	ZENER DIODE GZA9.1X } OR	(1)
	407 053 8807	ZENER DIODE MTZ9.1B } OR	(1)
E7	632 501 1004	JACK } OR	(1)
E7	632 537 7056	JACK } OR	(1)
E8	632 639 2355	SPEAKER	(1)
E9	632 634 8741	COVER, MICROPHONE	(1)
E10	632 634 8758	CUSHION, RUBBER, SPEAKER	(1)
E11	632 341 3244	CUSHION	(2)

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